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SYPHILIS IN CHILDREN.

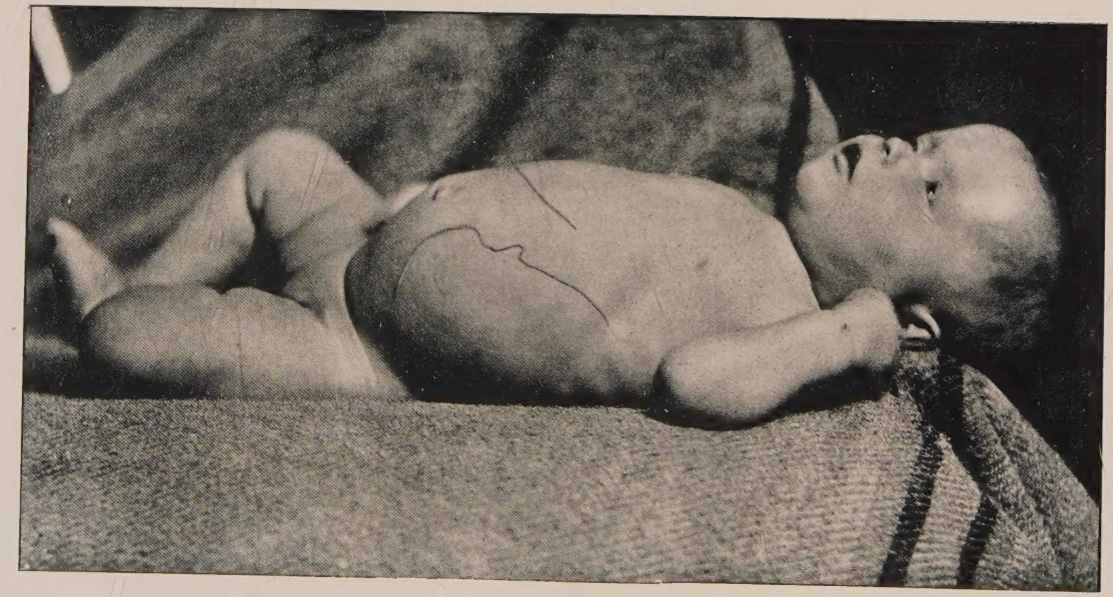

FIG. 1.

Rickety female, thirteen months. Cranial bosses ; enlarged liver and spleen, shown in outline (see p. 102).

(*Frontispiece.*)

THE

SYPHILIS OF CHILDREN

IN EVERY-DAY PRACTICE

BY

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NEW YORK:

WILLIAM WOOD & COMPANY.

1901.

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PREFACE

THE following pages are based upon a study of several hundred cases of congenital syphilis met with in private practice and in work at the Evelina Hospital for Sick Children. Many of the illustrations given are reproductions of sketches made on the spot to illustrate the clinical memoranda from which this monograph has been compiled.

GEORGE CARPENTER.

12, Welbeck Street,
London, W.
November, 1900.

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THE

SYPHILIS OF CHILDREN IN EVERY-DAY PRACTICE

INTRODUCTION.

Hereditary or congenital syphilis is so named to distinguish it from the acquired form, which is rarely met with in infants and children. It is conveyed to the ovum by (1) the sperm cells of the father, (2) the tissues of the mother, (3) from both parents. In the first place it often happens that the father syphilizes the ovum, while the mother escapes altogether. In exceptional cases the mother contracts the disorder from her syphilitic ovum (*choc en retour*), although this is denied by Rosinsky. Although the mother may never at any time show any signs of syphilis, she has nevertheless received protection from the disorder, which she cannot contract in the future. Thus, she is not infected by the mucous patches in the mouth of her infant fed at her own breast, but the same child is capable of infecting the nipple of a healthy wet nurse. This is the well-known law laid down by Colles of Dublin. A clue to the nature of this protection may perhaps be found in some experiments of Lingard, who inoculated with anthrax a fœtus in the uterus of a pregnant rabbit. The fœtus died of anthrax, but the mother survived, and it was then found impossible

to inoculate her with anthrax. The explanation appears to be that the placenta resisted the passage of germs, while it permitted that of antitoxin from the fœtus to the maternal circulation. If the mother contract syphilis after impregnation by a healthy man, she may or may not convey the disease to her fœtus. If treated early, she will probably not do so, but according to statistics, the majority of children *in utero* escape, whether she be treated or not. Viewed in the light of Lingard's experiment, it would seem that only under exceptional circumstances are the germs capable of passing the barrier of the fœtal placenta. Seeing that a mother undoubtedly derives protection from a syphilitic fœtus, the converse should hold good of a syphilitic mother. Whether this happens or not is unknown.

Zille's observations on the placenta are of great interest. The maternal portion, the fœtal, or both of them, may be attacked by syphilis. If the child be syphilitic, the fœtal portion suffers, and the maternal is usually healthy. Now and then the latter is involved, in which case the mother will be syphilized by her fœtus. If the mother be syphilized some time before conception, the maternal, and perhaps the fœtal, placenta is diseased. The life or death of the fœtus depends upon the amount of injury to the placenta, and in any case it will be syphilitic if the fœtal portion be attacked. If the mother be syphilized at conception, all parts of the placenta suffer, together with the fœtus. If the mother becomes syphilitic after impregnation by a healthy man, the fœtus usually escapes, but the maternal placenta suffers more or less.

The effect of syphilis is to kill the embryo if the disease in the parents be sufficiently strong, a condition which depends to a great extent upon the length of time that has elapsed since the primary sore. Miscarriages and abortions are the rule, until finally, when the virulence of the disease

is somewhat exhausted, a living child is born. A macerated fœtus does not necessarily mean a syphilitic conception. Birch-Hirschfeld found 70 per cent. were syphilitic in that condition.

Marriage is usually held to be safe in persons who have suffered from syphilis, provided they show no symptoms two and a half years after the primary chancre, and if they have been properly treated for two years. Fournier fixes the time at one year after the last symptoms. If the parents are untreated, the frequent occurrence of abortions and the birth of syphilitic children will persist for years, as in the following instances :

No. 1.

1. Child lived nine months ; chronic 'snuffles' and rash.
2. Child lived nine months ; chronic 'snuffles' and rash.
3. Seven months' child ; lived ten days.
4. Child healthy.
5. Miscarriage at fifth month.
6. Miscarriage at third month.
7. A syphilitic child.
8. Died at six months ; chronic 'snuffles' and craniotabes.

No. 2.

1. Child, aged twenty years, living.
2. Miscarriage at third month.
3. Miscarriage at third month.
4. Miscarriage at fifth month.
5. Chronic 'snuffles'; died at six years of small-pox.
6. Aged fourteen years ; rash and 'snuffles' during infancy.
7. Miscarriage.
8. Aged ten years ; living.
9. Died, aged nine months ; rash and 'snuffles.'
10. Died, aged six months, of 'abscess in the throat,' rash and 'snuffles.'
11. Miscarriage at third month.
12. Living, aged five years ; neither rash nor 'snuffles.'
13. Syphilitic child.
14. Syphilitic child. (*Mother has a gumma on the neck.*)

There are certain other points of interest about the inheritance of this disease. A syphilitic father will not necessarily produce a syphilitic child, nor will a syphilitic infant follow with certainty, even if both father and mother are sufferers. The symptoms in the child are not increased by the fact that it inherits from both parents. Syphilis is syphilis whether the child receives it from one or both parents, and is not modified in that way. The fact that the parents have reached the tertiary stage of the complaint does not prevent a syphilitic conception, although transmission at that period is not usual. The tendency of the disease is to disappear in course of time, but it takes many years to do so. In Henoch's case a syphilitic child was born to syphilitic parents twenty years after the primary infection. During this time the mother bore two children, who were healthy, but subsequently she had several abortions. During the life-history of the disease there are periods of activity and periods of latency. The children produced during periods of activity are syphilitic, whilst those born in the latent intervals are healthy. If properly treated by mercury a cure results, and healthy children will follow. Temporary treatment by mercury will often permit the birth of a healthy child, to be followed on its cessation by syphilitic offspring. A child is much more likely to inherit syphilis from its mother than its father, for with the former there is nine months of risk as against a short interval on the father's side. The severity of the disease must in each case depend upon the constitution of the infant. The products of succeeding pregnancies vary much as regards the mode of attack. One child may suffer severely, perhaps die, whilst the next has the disease in a mild form. One twin will contract the disease; the other possibly escape. The constitution of the child turns upon the vitality and health of the sperm cell at the time of conception. It

depends upon the like qualities of the ovum at the time of impregnation, and upon the general health and well-being of the mother whilst carrying. Apart from these factors, there are others no doubt of a complex nature concerning which we know nothing. Although it often happens that the nearer the parental illness the more likely are the children to suffer, yet this is not invariably so, and in these cases the more remote pregnancies are equally or even more involved. The lapse of time does not render fœtal syphilis, when once contracted, less severe. Time lessens the chances of succeeding pregnancies being injured, because the virus is usually smaller in quantity in the parental tissues, and therefore has fewer chances of reaching the ovum. A small proportion of the cases either do not develop symptoms during infancy or suffer so slightly as to pass unrecognised. During childhood or adolescence symptoms are recognised for the first time in the shape of certain pathognomonic affections of the eyes, throat, nose, ears, joints, and long bones. *Syphilis tarda*, or late syphilis, is the name applied to this condition.

The view that slight manifestations may pass unrecognised in infancy is held by many, the writer amongst the number, and to them syphilis tarda is simply a recrudescence of the complaint, and not an initial and delayed outbreak.

Inheritance to Third Generation.

Opinions are divided as to whether the complaint can pass to the grandchildren, but most observers oppose that view. At any rate, syphilis of the present day is not the terrible malady it was when it first came under observation in Europe in 1494 (syphilis of infants at the breast was first noticed in 1498 by Gaspard Torello). This diminution is partly due to the fact that the race has been more or less

influenced by the disease during these centuries. In its behaviour in this respect it in no sense differs from the exanthems—measles, for instance—the virulence of which when acting upon a virgin soil is well known. By its transmission through countless human beings a limited protection has been acquired and the virus has become attenuated.

Fœtal Syphilis.

In 92 macerated syphilitic fœtuses Mervis found the spleen diseased in 72, the liver in 56, the pancreas in 14, the suprarenal capsules in 11, the lungs in 3, the skin in 1, and the cartilaginous ends of the bones in 64.

According to J. N. Hyde, of 1,700 syphilitic pregnancies one-third resulted in the destruction of the ovum or fœtus. Hochsinger states that syphilis is characterized in its fœtal and early manifestations by a tendency to diffuse infiltrations. The syphilitic virus finds the most favourable soil for its action in the organs and epiphyses, which during fœtal development are characterized by a free blood and lymph supply. The virus finds the parenchyma of glands specially favourable for its operations on this account.

SYMPTOMATOLOGY.

Cutaneous Manifestations.

Maculo-Papular Syphilide.—The most common eruption in congenital syphilis is the maculo-papular. Macular and papular eruptions are here grouped under a common heading because it is difficult to draw any hard and fast line between them. Sometimes they incline more to the one than the other, but are often so blended in practice that no good purpose is served by a division into two separate

FIG. 2.

Male child, aged fourteen days. Area of eruption, as depicted in sketch, of red colour, in places raw-looking, with scales of curled-up detached epidermis, especially on the face, the feet, and the hands. About the lips and angles of the mouth the skin was cracked and fissured. The whole of the back was red and raw-looking, portions being dry and others moist. There were a few raised dull-red spots seen, especially about the legs. There were several small bullæ on the forehead with clear contents, and one large opaque bulla involved the whole of one thumb. Extensive craniotabes of both parietal bones.

groups. The amount of cutaneous infiltration varies in different localities in the same subject. If small in amount the erythematous lesions predominate, and if large the papular. Of 364 cases of congenital cutaneous disorders within the first twelve months of life, 196 showed papulo-macular lesions of some considerable extent (Fig. 2). Of these, 87 were more or less general in their distribution, and 109 were confined, for all practical purposes, to the lower half of the body. Ten of the former and a like number of the latter were associated with cutaneous gummata, of which there were 70 cases in all (see p. 29). During the first month there were 15 cases, the second 69, the third 58, the fourth 15, the fifth 15, the sixth 9, the three following months 3 each, the tenth month 4, and the twelfth 2. In a trifle over 100 the lesions were limited to the buttocks and the backs of the thighs. The lesions were often disseminated papules and macules, and did not for the most part tend to sheet formation.* Like the more widely distributed eruption, they were most prevalent during the second and third months of life, and cutaneous gummata were sometimes associated with them. The writer has never seen an extensive maculo-papular syphilide later than the twelfth month. At first rosy red, the rash soon becomes dusky, and finally assumes a dirty brown, copper or rawham colour. At first disappearing on pressure, it subsequently leaves a dirty yellow or brown stain from deposition in the tissues of the colouring matter of the blood. There are certain common situations for this eruption, as the face and the area covered by the napkin. On the buttocks, the

* The use of the term 'sheet eruption' occurring in this and subsequent pages is intended to convey the fact that by the confluence of contiguous macules and papules considerable areas of the skin are involved in a continuous sheet or plate of eruption. Illustrations of sheet eruptions will be found in the accompanying sketches drawn from life.

inner sides and backs of the thighs, the fronts of the thighs to a less extent, the groins, the genitals, the lower parts of the abdomen and the back, the eruption frequently forms a more or less continuous sheet, usually extending beyond the napkin area. Isolated lesions will often be found on the

FIG. 3.

Male, aged five weeks. Sheet eruption, bright red, with outlying papules and macules, some scaly; a few lesions on one forearm and on the cheeks; spleen enlarged; hydrocele; craniotabes.

calves, and also on the abdomen (Fig. 3). On the front of the body the upper margin of the eruption generally extends beyond the napkin area, and will often be found to reach a little below the level of the umbilicus, but occasionally

above it. On the back the border usually ends at the level of the top of the sacrum, but in some cases reaches as far as the mid-lumbar region. The margin of this sheet eruption is irregularly indented or scalloped, and may or may not be raised above the surface, while around it will usually be found isolated round or oval flat-topped lesions scattered

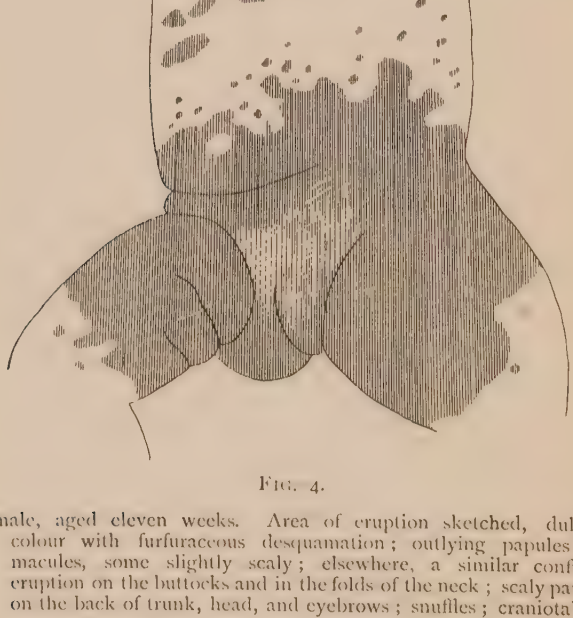

FIG. 4.

Female, aged eleven weeks. Area of eruption sketched, dull-red colour with furfuraceous desquamation; outlying papules and macules, some slightly scaly; elsewhere, a similar confluent eruption on the buttocks and in the folds of the neck; scaly papules on the back of trunk, head, and eyebrows; snuffles; craniotabes.

irregularly, and varying in size from a pin-puncture to a split-pea. Sometimes they even reach the size of half a crown (Fig. 4). These outlying lesions in some situations are slightly or not at all raised to the touch, or they may

be decidedly infiltrated, which is much less common. They may be smooth or covered by a branny desquamation, and smooth and scaly areas may be found on the same patient. In rare cases numerous tiny cutaneous gummata may be seen bordering a sheet eruption, while a combination of the maculo-papular with two or three cutaneous gummata is not uncommon (Fig. 5). The buttocks look

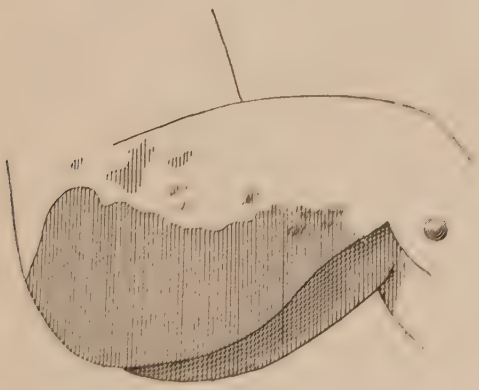

FIG. 5.

Female, aged six weeks. Area of eruption of raw lean colour; outlying papules; raised edge to sheet eruption for the most part. Note the cutaneous gumma on the right leg. Liver enlarged; craniotabes.

as if smeared over with a thin pellicle of collodion, imparting a peculiar varnished appearance to the rash. When great attention has been paid to cleanliness, the skin may look red or coppery, and be covered by a branny desquamation. Fissures about the anus and superficial excoriations about the buttocks and genitals are not infrequent. The excoriations have brilliant red bases, or look as if the cuticle had been shaved to the underlying bloodvessels,

which appear as pink dots on the surface. Bordering the excoriations will be found a narrow rim of dusky sodden skin. The *anus* not only presents fissures in some instances, but there may be also excoriations or ulceration, and the mucous membrane is sometimes thickened. Typical condylomata are rare before six months of age. The *scrotum* is frequently much swollen and œdematous, and presents fissures or excoriations, or isolated lesions may be scattered about the genitalia. The *groins* are often raw and show superficial ulcerations with gray bases. When the eruption extends beyond the napkin-area the *legs* are involved chiefly about the calves, the lesions being either isolated or massed into a sheet eruption, in which case the outlying lesions may or may not be numerous. The flexor surfaces of the lower extremities suffer more severely than the extensor. The *feet* may show isolated lesions on their tops, or the tops and the soles may be affected together. They may be found desquamating in either situation, or perhaps red and scaling, the cuticle peeling off in great flakes (Fig. 6). Together with the hands they may escape, even though the rash be plentiful elsewhere. The *upper extremities* are often involved in much the same way as the lower, though perhaps less plentifully. On the whole, the flexor surfaces are more covered with eruption than the extensor, but both may suffer equally, or the latter more than the former. The rash consists of sheet eruptions and isolated lesions, but the tendency to the former is not so marked as in the lower extremities. The *hands* may escape, or show a few scattered lesions. Sometimes there is desquamation only. In other instances they may be of a red or copper hue, and covered with scaling cuticle. In the *axillæ* dry scaly eruptions or copper-coloured desquamating patches are not uncommon. On the *chest*, both back and front, the lesions are, as a rule, scattered sparsely. The *face* is commonly involved,

and may alone be affected. A favourite site is on the forehead or about the mouth, where a sheet eruption is often seen. From the mouth it often spreads to the chin

FIG. 6.

Female, aged five weeks. Desquamation of hands and feet in large flakes; integument red where shading is dark; isolated lesions on legs; general maculo-papular syphilide, involving chiefly the buttocks and backs of the thighs; sores at the angles of the mouth; snuffles; enlarged liver and spleen.

or cheek, and underneath the lower jaw sometimes as far as the neck. This plate eruption may or may not be made by outlying macules or papules. The lesions may be scattered over the face.

The thickened and infiltrated skin is unusually prone to

crack and become fissured. These cracks and fissures (rhagades) appear on the chin and naso-labial folds, and radiate from the mouth as a centre. The rhagades subsequently cicatrize, and the radiating scars which are left are almost pathognomonic of the complaint.*

At the angles of the mouth and eyelids papules are apt to form. They crack, and are quickly converted into grayish ulcers which readily bleed. Vertical fissures are also prone to form on the lips—in the lower lip in the mid-line, and in the upper on either side of the intermaxillary portion. The lips and chin may be raw and crusted by pus inoculations from the nasal discharge. The *neck* often suffers, and a favourite situation is the folds of the neck, especially in fat children. In these will be seen a sheet eruption, which is usually surrounded by outlying copper-coloured macules or flat-topped papules. The *scalp* may present a disseminated maculo-papular eruption, and is sometimes found to be desquamating. The *mastoid* regions are not infrequently invaded by a dry scaly rash. The *ears* may also suffer in like manner.

There may be little leaning to the formation of sheet eruptions. Isolated squamous papules and macules, with a tendency to the formation of small serpiginous patches, may be widely distributed over the body. Sometimes there is seen a small sheet eruption surrounding the anus, with outlying papules and macules on the buttocks or backs of the thighs. Thus, in an infant, four months old, such a lesion was seen on the outside of either thigh and leg, having a peculiar coppery festooned outline one-eighth of an inch in breadth and of some considerable vertical extent. Sometimes these isolated papules and macules show a disposition to ring formation. In one infant of seven weeks with a maculo-papular eruption there were two extensive

* Similar scarring sometimes follows a severe case of eczema.

rings on the abdomen, one inside the other. The outer was $2\frac{1}{2}$ inches in diameter, the inner about $\frac{1}{2}$ inch. Sometimes there is a tendency to the formation of a

FIG. 7.

Male, aged eight weeks. Eruption (over *both* legs) raised, pink, and scaling in places; forearms involved, also neighbourhood of eyebrows; a few papules round mouth and front of the chest; hands and feet desquamating in large flakes.

peculiar coarse network of papulo-macular eruption with meshes of healthy skin (Fig. 7).

In other cases, when the eruption has all but disappeared, slight staining alone remains to tell the tale. Some children

will be found desquamating more or less all over, with injection of the underlying cuticle, and perhaps extensive scaling on the hands or feet. In some there is exudation, and the scales may be replaced by thick yellow crusts, which may be found about the mouth and nose, ears, eyebrows, feet, hands, buttocks, and even the limbs. Such are often traumatic, due to unfair treatment of the skin. It was an irritant soap in one case. Further rough usage by scratching and the formation of vesico-pustules from pus inoculations complicate the original lesions.

Disseminated macules and papules—flat-topped, of round or oval outline, with varnished but sometimes scaly surfaces, of a coppery hue or dirty brown tint, and varying in size from a small shot to the head of a tin-tack or larger—are not uncommon in the neighbourhood of the anus and buttocks. After the disappearance of the general eruption these lesions often recur, and may be the only cutaneous manifestation of syphilis in the early months of life. They are not often seen after the twelfth month, although some of the writer's cases occurred up to five years of age. Occasionally a few similar isolated lesions may be found on the backs of the thighs. In association with these will frequently be noted small localized excoriations on the genitals and buttocks, and these excoriations often present an irregular shape with festooned outline. These have been often noted in infants known to be syphilitic, and the condition appears to be of some clinical value. They probably arise from the maceration of macules and papules, and, like these, occasionally occur after the twelfth month. *Umbilicated papules*, which may ulcerate superficially in the centre, are sometimes seen. The small acuminate papule, such as occurs in acquired syphilis, is rarely met with.

Syphilitic eruptions on the buttocks have to be distinguished from erythema due to careless nursing. This

erythema has no defined edge, and is not surrounded by the outlying lesions so common in syphilis. Syphilitic *intertrigo* is not strictly limited to the opponent parts. The edges are often raised, there are outlying lesions, and the rash is often copper-coloured. It probably extends beyond the rubbing surfaces. If in the groins to the thighs, or on to the buttocks or the abdomen. If in the folds of the neck, the parts beyond the rubbing areas are affected. *Urticaria papulosa* is not uncommon in syphilitic infants, with accompanying vesicular and pustular lesions. Small vesicles or pustules are sometimes seen in the palms and soles, and must not be mistaken for the bullous syphilide. The papules are more defined and paler than syphilitic papules, and careful search will probably show wheals. The urticarious eruption is very irritating, and is consequently much scratched; whereas syphilitic rashes do not itch. Three infants were found to be suffering from a maculo-papular eruption and *scabies* at the same time, a combination that at first was very puzzling. Acari were discovered in each instance, and the fact that their mothers were typical sufferers from scabies aided the diagnosis.

Among the rarer syphilitic cutaneous manifestations may be mentioned *ulcerations of some depth.* The author has seen these about the genitals and the parts between the anus and scrotum and on the buttocks and groins in children a few months old. These ulcers are clean-punched, deep, with indurated red or copper-coloured margins and pus-secreting surfaces. A round or oval raised patch of eruption of some size and of a copper hue is found in some children. Ill-defined papules the size of hemp-seeds will be seen scattered over it, and of these it is evidently composed. Such a patch may be found with other cutaneous lesions or may be the sole evidence of the cachexia.

Ringed eruptions of any extent are uncommon, and there are but four examples in the author's note-books of such a condition. In one child, aged five months, the lesions were plentiful on the thighs and face. There were flat-topped, raw-ham papules on the buttocks about the size of the head of a tin-tack. The rings were the diameter of a shilling, presenting in the centre either a raw-ham coloured

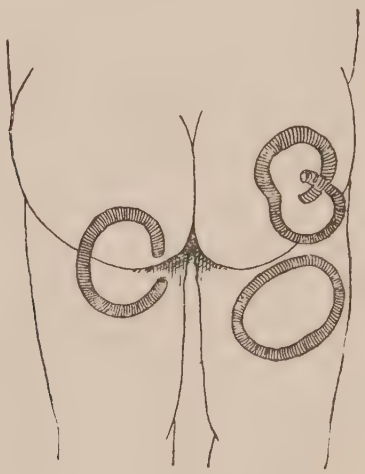

FIG. 8.—Ringed eruption.

papule or slight pigmentation. The margins were raised, and were $\frac{1}{8}$ to $\frac{1}{4}$ inch broad, of a copper colour, and marked with radial lines. The other child, aged fifteen months, had a ringed eruption on the buttocks. The largest ring was 2 inches in diameter (Fig. 8). The margins were raised, scaly, $\frac{1}{4}$ inch across, transversely striated, and of a raw-ham colour. There was a history of syphilis, and she had been treated with gray powders for a period of three months, commencing a few weeks after birth. The eruption quickly disappeared

FIG. 9.

Female, twelve months. Gyrate eruption from fusion of copper-coloured papules, $\frac{1}{8}$ inch in diameter or less, of two months' duration; rickety; chronic snuffles; anal condylomata; enlarged liver and spleen; child fat and pale; slight leucocytosis. Her mother also had a gyrate copper-coloured syphilide around the mouth and chin.

(*To face p.* 27)

under the influence of mercury. In another child, aged three months, there was a ringed rash scattered about the chest, abdomen, buttocks and legs. The rings varied in size from a sixpence to $\frac{1}{4}$ inch in diameter. The margins in some were narrow, slightly raised, and a trifle scaly; in others the central portions were scaly, with a less scaly margin. The last, a child twelve months old, is the subject of the accompanying illustration.

Pustular Syphilide.—Pustules are occasionally seen in severe cases. They are situated on a copper-coloured, infiltrated base. The favourite situations are the face, the head, the buttocks, the thighs, and sometimes the hands, but no parts are exempt. When present in other regions they are more scattered. Sometimes groups of pustules are situated on an area of infiltrated skin. Their contents are discharged, or they dry up with the formation of dirty crusts. They may simulate the flattened bullæ of impetigo contagiosa, but are differentiated from that disease by their infiltrated bases and dirty crusts, as also by the deeper underlying ulceration. When large areas of the face are attacked, and eczema is simulated, the same characteristics will distinguish the two diseases. The earlier the infant is attacked, the more numerous and better developed will be the pustules. Scarring is occasionally observed.

Vesicular Syphilide.—The vesicular syphilide is much rarer than the pustular. The vesicles, the smallest of which are about a couple of lines in diameter, form closely-packed groups of conical lesions, which rarely coalesce, on copper-coloured infiltrated cuticle. They are usually found in association with pustular or bullous lesions. The usual situations are the mouth and chin, the buttocks, thighs and forearms. If larger than the above, their contents will be found to be opaque.

The Bullous Syphilide is distinctly uncommon. It

is one of the earliest manifestations of congenital syphilis, and the infant may as an extreme rarity be born with the eruption, or with superficial ulcerations left from preceding bullæ. The eruption may be general or confined to the typical situations upon the palms and the soles. The bullæ vary in size from a pea to a hazel-nut, or larger, and are usually seated on copper-coloured bases of infiltrated skin. They are generally flaccid, and contain serum or pus which may be blood-stained. When they rupture, a dead-white cuticular covering is left which hides the underlying excoriations. Sometimes greenish scabs are formed. This eruption appears, as a rule, within the first week or two of life, but it has been observed as late as the sixth week or later. The more pronounced the eruption, and the earlier the onset, the more likely is the disease to prove fatal. The children often die.

The bullous syphilide must not be confounded with *pemphigus neonatorum*, to which it bears some resemblance. The eruption of the latter usually appears about the second week, but it may occur as late as the first few months of life. It develops rapidly, and in the meantime the children are well. The trunk is its favourite situation, then the face and limbs; whereas the palms and soles rarely suffer. Its lesions, often numerous, vary from a pea to a two-shilling piece, and contain turbid serum; the bullæ are slack, and mixed with impetigo pustules. It occurs sometimes in epidemics, and is conveyed by contaminated clothing and toilet articles. It lasts two or three weeks, and is, as a rule, quite free from danger. It is not true pemphigus, but is a bullous contagious impetigo, and Escherich suggests that it should be called *impetigo bullosa infantum*.

Cutaneous Gummata (*Furuncular Syphilide*).—Bumstead and Taylor call attention to these lesions under the latter heading. They say that they occur from the

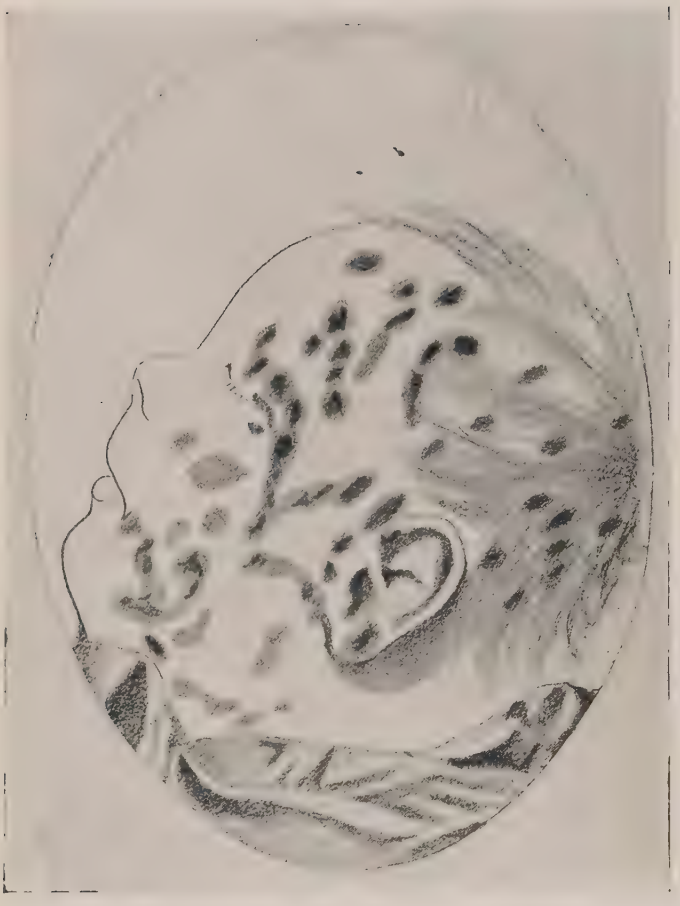

FIG. 10.

Male, seven weeks. Raised copper-coloured cutaneous infiltrations. The dark shading represents flattened pus-containing bulke, or crusts of a dirty yellow colour. A similar eruption was scattered about the body and the extremities. Organs natural; absence of snuffles.

(*To face p.* 29.)

sixth month to as late as the third year. The majority of text-books make little or no mention of them, yet these 'blind boils,' as the mothers tĕrm the condition, are far from uncommon. Of 364 examples of syphilitic cutaneous eruptions under the author's observation during the first year of life, 70 were instances of cutaneous gummata. Of these 70 cases, 34 were associated with other syphilitic cutaneous disorders. A little over 19 per cent. of the cutaneous cases therefore present these gummatous lesions. They are most common during the first year of life. Of 83 cases, 70 were found during this period. In the second year there were 9 cases, in the third year 3, and in the fourth year 1. The subjoined table shows the ages at which they came under observation :

	Months.																Years.		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	17	21	24	3	4	
No. of cases	4	9	13	5	9	7	4	3	8	4	1	3	2	1	1	1	1	3	3	1	Total .. 83

Cutaneous gummata appear as pink, copper-tinted, or violet-coloured areas in the skin from $\frac{1}{16}$ to $\frac{1}{2}$ inch or more in diameter. If small they may not appear raised to the naked eye, a red staining alone being visible, but if they have reached the diameter of a pea they are obviously so. In some cases they present a vesicular summit; in others they are pus-tipped or covered by a scab. Occasionally there is no cutaneous discoloration. When examined with the finger they are found to be deep nodular infiltrations of the true skin. When several gummata are close together, the cutaneous infiltration, in place of being rounded, presents an irregular outline, though the individual gummata may still be mapped out. Cutaneous gummata are usually the size of a pea, but now and then may reach that of a marble, a

chestnut, or a walnut. They are indolent cellular infiltrations of the skin, which in course of time break down and discharge their purulent contents by a small round central opening. Occasionally shallow ulceration occurs on the surface, which afterwards scabs over. In other cases there is a central gray slough. Bumstead and Taylor say that 'a superficial ulcer forms at the summit of the nodule, and a mass of slough comes away, leaving a deep cavity with irregular unhealthy walls and everted discoloured margins, which may remain in a sluggish condition for many weeks, or may increase in dimensions.' They are found singly or in twos or threes, and are then placed irregularly, but if numerous, as is often the case, the distribution is symmetrical. They are common on the head, where they may be numerous, and on the buttocks, thighs, and abdomen. The writer has met with them in every situation except the soles, the lips, and the eyelids. On the discharge of their contents they present a central dark depression, surrounded by a dusky purple areola. Finally, a tiny scar is left to tell the tale. When the discharge takes place by a larger opening, more extensive scarring results, and such is occasionally found. They may remain quiescent for weeks without breaking down. If the child be placed under mercurial treatment they may disappear in two or three weeks without further formations. On the other hand, in spite of treatment, fresh crops may arise from time to time, and the duration is measured by weeks, and perhaps months.

Not only are cutaneous gummata often associated with other syphilodermata, but they may be also mixed with severe urticaria papulosa or urticaria vesiculosa and pustulosa. This disorder is not uncommon in syphilitic babies. Occasionally they are found with a more or less extensive polymorphic eruption of papules, vesicles, and

FIG. 11.—CUTANEOUS GUMMATA.

Rickety male, twelve months. Depressed nasal bridge; chronic snuffles; enlarged liver and spleen and consolidation of left lung; father syphilitic. For further particulars of the case see p. 47.

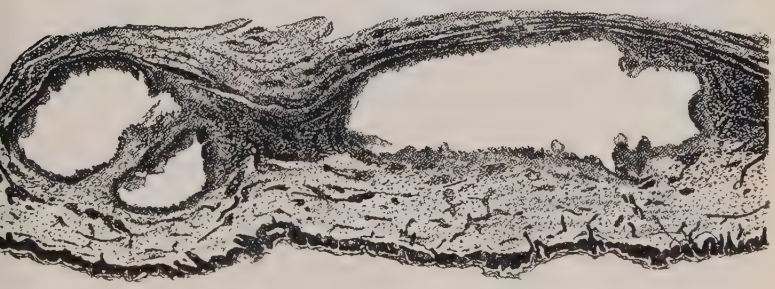

FIG. 12.

Microscopic section of cutaneous gumma. The cellular contents had broken down, and were lost in the process of preparation.

(*To face p.* 30.)

pustules, but in such a case it will be noted that there is an absence of wheals, the hands and feet escape, the eruption is not irritating, and the lesions which have not been induced by pus inoculations are found, on digital examination, to be accompanied by decided cutaneous infiltration. Varicella is not uncommon in infancy, but its lesions, although polymorphous, are free from induration, and its exclusion should not be difficult.

Gummatous Infiltrations.—A not uncommon site for cellular infiltrations in infants is the buttock, in the neighbourhood of the anus. The overlying skin is of a copper or purple red colour, and covers a diffuse underlying infiltration of the corium. The subcutaneous tissue may be involved in an induration of almost stony hardness. In one of the writer's cases the induration extended to the corresponding groin. These infiltrations, if untreated, break down and discharge a sero-purulent material by one or more orifices. They are amenable to mercurials.

Subcutaneous Gummata are primarily seated in the subcutaneous tissue. They are firm, indolent, movable nodules, which later on become attached to the skin, or less frequently to the underlying structures. They are usually about the size of a pea, but may attain much larger dimensions. They occur singly or in groups of two or three, but are rarely numerous. They are mostly found from the third to the twentieth year—sometimes much earlier, but rarely later. The favourite situations are the head, the face and neck, and the neighbourhood of the joints. They are usually found where the connective tissue is abundant (Fig. 13).

When the overlying skin is involved it assumes a coppery hue, with a raised hyperæmic areola. The next stage is the formation of round, oval, or sinuous ulcerations. These are sharply-punched-out sores with unhealthy bases, like

wash-leather, and indurated edges surrounded by a hyperæmic areola. They are shallow or deep, according to the amount of tissue involved. Finally, a cicatrix is left surrounded by a dull coppery areola. If superficial the scars are thin, of a dull white colour, and slightly depressed. At times the depression is much greater, and the

FIG. 13.

Female, aged four years, with gummatous ulceration of the scalp healing. In places the skull had been laid bare.

cicatrix is uneven and may be adherent. Absorption of the gummata and healing of the ulceration are rapidly effected under antisyphilitic treatment. The *tuberculous gumma* commences as a flat growth immediately beneath the true skin, which it subsequently invades. The overlying cuticle assumes a violet hue, breaks down, and gives exit to a thin curdy pus. The resulting ulcer has a yellow, unhealthy-

looking base, and its edges are undermined, the skin being thin, blue, and poorly supplied with blood. The tuberculous ulcer does not extend so deeply as the syphilitic. To distinguish between the two in some instances, it is necessary first to watch the effect of antisyphilitic remedies.

Syphilitic Lupus is a cutaneous eruption confined to the later stages of the disorder. It is characterized by the formation of a patch of infiltrated skin of a red or copper colour. The infiltration spreads at the margin, the tendency being to the invasion of the healthy skin and the formation of annular, crescentic, horseshoe-shaped, or gyrate edges. On the raised margin will be found crusts covering underlying ulcerations, or ulcers with sloughs of ashen-gray or yellow colour. While spreading at the periphery, the parts already attacked tend to heal. In its course the eruption invades the adjacent tissues. Thus, on the face, a favourite situation, it may lead to the destruction of the nostrils, the cartilaginous septum of the nose, the upper jaw, and mutilation of the lip. Although the face is prone to attack, no parts of the body are exempt. It is found in two varieties—one a rapidly destructive process, not uncommon on the face, and the other slow and creeping.

The disease often resembles tubercular lupus, but differs from it clinically in the rapidity of its course, the latter being of very slow development. It is marked by the absence of apple-jelly-like nodules at the spreading edge, and the formation of thin, white, supple scar tissue in the place of thick, and often congested, cicatrices which are found in tubercular lupus.

In some instances, in the absence of characteristic gummata which occasionally accompany the condition, it is impossible to distinguish between the syphilitic and the

tubercular, and the active treatment of the case by anti-syphilitic remedies will alone decide the question.

Alopecia.—Alopecia is seen occasionally in syphilitic infants. There is usually not a complete loss of hair, but it is poor and scanty over the affected areas. The hair may be partially lost over the front half of the scalp, or it may be thinned irregularly, and the writer has seen symmetrical patches of thinning over the parietal eminences and neighbouring parts. The whole of the hair of the head may be represented by a downy covering with a few long and straggling hairs, but a complete denudation, such as occurs in alopecia areata, is very exceptional. The hair may be worn off the occipital region in non-syphilitic and non-rickety head-rolling infants as early as the third and fourth months—at the period, therefore, when syphilitic manifestations are most marked. Later on, during the first year or so of life, the same denudation of hair and the same head-rolling will be found, when, perhaps, the child is rickety and sweats freely about the head. In these head-rolling children the friction-line is very marked and plain to see. The writer has, however, seen a circular patch of alopecia, with irregular thinning of the hair elsewhere and partial loss of eyebrows, not due to friction, on the occiput of a three-months-old syphilitic infant.

Children who have been lying in bed for a long time fixed in position on their backs are apt to become partially bald in the occipital region.

A partial or complete loss of the **eyebrows** and **eyelashes** is occasionally seen, and the writer has notes of several such cases. This condition is more valuable as a diagnostic sign of congenital syphilis than loss of hair on the scalp.

FIG. 14.

Gummatous ulceration of the leg in a girl aged nine years. The leg also displays a well-marked tibial node.

(*To face p.* 35.)

The Nails.

The nails of syphilitic infants are occasionally absent at birth. Under antisyphilitic treatment they grow rapidly. Atrophic changes may take place. They grow longer and narrower, and finally assume a claw-like shape, and may be shed. Exfoliation may be repeated several times, until eventually healthy nails are produced. Purulent exudation in the nail-bed, with subsequent loss of the nail, may occur. Inflammation at the root of the nail may lead to the production of a fanlike nail, with the broad part at the free end. In some cases the nails are opaque and ridged. Ulcers with thickened edges and coppery areolæ may form at the junction of the nails with the skin, and when the matrix is involved the nail is thrown off. In these cases the terminal phalanx is apt to become club-like and painful. A later manifestation (after the second year) consists in a swelling and coppery discoloration of the skin at its junction with the nail. The nail becomes thickened, opaque, fissured, and brittle. The matrix is hyperæmic and the finger-end clubbed.

The Teeth.

In syphilitic infants the formation of gumboils is occasionally observed, with subsequent extrusion of the crowns of the teeth from the abscess sacs. The upper central incisors almost always suffer alone (Hutchinson). Parker found other gumboils which developed over the position of the molar teeth in one case. The writer has not as yet met with an instance of the disorder. The temporary teeth are prone to early decay, especially the upper incisors. Some observers say they are late in appearing. In the cases of hereditary syphilis under the author's observation for long periods that has certainly not been the case. The temporary

teeth do not usually show any changes characteristic of the disease, but this is not so with the permanent set. In the permanent set the test teeth, according to Jonathan Hutchinson, Senior, are the upper central incisors. The affected tooth is dwarfed as regards its length and breadth. It is rounded and peg-like. The enamel is deficient in the middle of the notch, but not always. When deficient the notch is usually crescentic. The teeth usually incline towards one another, or may diverge. They are seldom large enough to touch both their neighbours.

These test teeth are present only in the minority of cases of hereditary syphilis. They are certainly not absolutely diagnostic of hereditary syphilis. Keyes calls attention to the fact, and Henoch says he has seen these teeth in children who are certainly not syphilitic.

The Lymphatic Glands.

It is not at all uncommon to find a plentiful eruption in syphilitic infants apart from glandular enlargements. Sometimes a general shottiness of the glands will be detected. The lymphatic glands in hereditary syphilis are less often involved than in the acquired disease. There may be enlargement of some or all of the glands in cases affected with chronic snuffles only, or in those with craniotabes in addition. The writer has found not infrequently slight enlargements of the glands above the internal condyles of the elbow-joints in syphilitic infants, or in those who excited strong suspicions of the malady.

These enlargements are certainly of some diagnostic value, though they are often absent when the disease is strongly marked. Sometimes a doubt arises as to whether the condition is due to the syphilitic cachexia or to some neighbouring cutaneous or more deeply-seated manifestation.

In other instances, however, no such lesions are present, and the glandular enlargements cannot be explained in this way. The enlarged glands vary in size from a small shot to a marble. The most common situations, in the writer's experience, are the inguinal regions, and the glands next most likely to suffer are the occipital and axillary, but all may be involved. They are hard, separate, freely movable under the skin, and rebellious to treatment. In the absence of any obvious cause, their hypertrophy should excite suspicion of congenital syphilis. These enlargements are more often found from the third to the twelfth months of life than later, but they may be seen in childhood occasionally. Hutchinson narrates the case of a girl of fifteen years, at the time suffering from interstitial keratitis, who had considerable glandular enlargement in the neck, which rapidly subsided under the influence of iodide of potassium. Such a case is, however, quite exceptional.

The Mucous Membranes.

Coryza.—Of all the signs and symptoms of congenital syphilis, coryza is the earliest and most frequent manifestation of the disease. It is rarely absent, and not infrequently is the only sign. It persists for months or years, and in the writer's experience adenoid vegetations often follow chronic snuffles in syphilitic children. On the other hand, there may be chronic rhinitis without a trace of post-nasal growths. From a simple catarrh it is distinguished by its duration, as a cold in the head rarely lasts longer than ten days. In its earliest stages a thin serous fluid exudes from the nostrils. The infant sneezes and splutters, and has a frequent short cough, at times associated with laryngeal spasm. Later on the discharge becomes purulent, and sometimes mixed with blood. Some observers, Trous-

seau amongst them, have recorded epistaxis. The secretions sometimes form crusts which hinder or stop nasal respiration. The infant makes a snuffling noise when he breathes, hence the popular name. The greater the impediment to the entry of air by the nose, the greater the difficulty in suckling. Every time the baby takes the breast or bottle he is partially suffocated, and the teat has to be dropped to breathe, and the nutrition of the infant suffers as a consequence. If the nose be blocked with crusts the discharge finds its way into the throat by the posterior nares. The structures supporting the nose may be destroyed, bringing about a depression and broadening of its root which is characteristic of the disease. Small flakes of bone may be found in the discharges. Some observers believe that the nasal deformity is developmental in syphilitic children, and not caused by destruction of the bony and cartilaginous supports. Diday thought the condition of the Schneiderian membrane was owing to mucous patches, followed by ulceration and exposure of cartilages and bone; and further, on looking obliquely up the nostril with the face of the child placed against a window, that the septum nasi might be seen perforated.

The Buccal Cavity and Fauces.—Obvious affections of the mouth in syphilitic infants are far from common. Mucous patches are sometimes found on the tongue and cheeks. The palate, tonsils, and fauces may be attacked, but it is quite easy to overlook lesions in the latter situations, for a thorough examination is difficult. The mucous patches at first are gray in colour and surrounded by a hyperæmic zone. Next the grayness disappears, and the part is then found to be red and slightly depressed. The patches may subsequently ulcerate superficially, and several neighbouring patches may unite and form a superficial ulcer with a festooned edge.

Erythematous Stomatitis in the new-born, a condition in which the tongue and buccal mucous membranes are of a bright-red hue, must not be looked upon as specific. The condition is physiological, and requires no treatment.

Bednar's Aphthæ, also found in the new-born, consist of shallow, non-specific ulcers situated on the soft and posterior part of the hard palate. Ulceration arises from rough cleansing of the mouth, and the use of unsuitable rubber teats. From *thrush* the diagnosis is not difficult. Thrush is whiter, more patchy, more widely distributed, and the attendant redness is greater. The *Saccharomyces albicans* can be demonstrated microscopically in the white, paint-like pellicle, which can be removed for that purpose. In *catarrhal stomatitis* the distribution is much more extensive, and the redness is extreme. Bottle-fed babies are prone to it.

The secretions from the mucous patches in the mouth are infective to persons other than the *mother* of the child (Colles). Inoculation from these would be attended by the development of a hard chancre at the seat of inoculation, as, for example, the nipple of a healthy wet nurse. Hutchinson narrates a case where a healthy father contracted a hard chancre on the tonsil from starting the flow of his syphilitic infant's feeding-bottle.

Deep Ulceration of the palate, pharynx, and naso-pharynx occurs even in early infancy, and may be detected within the first year of life (J. N. Mackenzie). The present writer has once seen, far back on the dorsum of the tongue in a syphilitic infant, an ulcer of some depth, which was not detected during life. In another syphilitic infant a month old he found an ulcer of the frænum linguæ. Deep ulcerations of the palate and pharynx are more frequent later in life, mostly about puberty. Ulceration of the palate and pharynx may be associated with a similar condition of

the larynx, and still more often of the nasal mucous membrane. The favourite seat of the ulceration is the palate, where it is, as a rule, central. On the hard palate and nasal mucous membrane it is usually attended by caries and necrosis of the bones, but these deep lesions are not common. Ulceration, when once started, is rapid in its destructiveness, a fact that distinguishes the syphilitic ulceration from the tuberculous, where the progress is slow and indolent. More damage will be done in a week from syphilis than can happen in a year from tubercle. More rarely still the tongue may be involved by a gumma, leading to a characteristic ulceration.

A boy of seven years, under the author's care, had a unilateral swelling of the tongue, which was thought might be gummatous. He had a temperature of 102·6° F. when first seen, and the submaxillary glands were much swollen. The onset was somewhat acute—five days or so—and there had been some difficulty of breathing. The improvement and cure were so rapid under mercury—about ten days—that, taken in conjunction with the unilateral situation of the swelling, the suspicion as to its gummatous nature was practically confirmed. No other evidence of syphilis could be obtained.

A female child, aged four years, complaining of a 'bad throat,' was found to have extensive ulceration of the soft palate, with free muco-purulent exudation (see Fig. 15). She had a purulent discharge from the nose, a scar on the right tibia, and one epitrochlear gland was enlarged. Prior to her birth there had been one miscarriage and one still-birth. Five grains of iodide of potassium and 80 minims of liquor hydrargyri perchloridi were ordered three times a day. She took this mixture for over seven months, and when last seen the palate had healed, but with the loss of the uvula and a greater portion of its substance.

In a female child, aged eleven years, there was no question about the syphilis, which was admitted by the father. The child had Parrot's nodes, Hutchinson's teeth, a palmar syphilide of the left hand, a node on the left tibia, and three depressed scars, with festooned outline and a coppery hue, on the left shin. The uvula had gone, and the soft palate was partially destroyed. The tonsils were ulcerated,

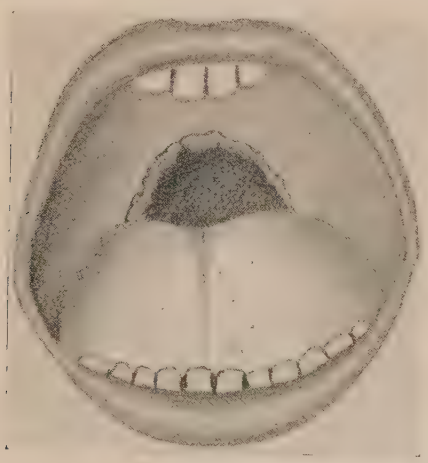

FIG. 15.

Gummatous ulceration of the soft palate in a child of four.

and the posterior pillars of the fauces could not be seen. There was an ulcer of irregular shape, covered with a grayish slough, on the left lateral pharyngeal wall. The larynx was normal. There was much thickening and ulceration of the nasal mucous membrane, with muco-purulent discharge. A point of interest about the case was that her mother had suffered from extensive gummatous ulceration and destruction of the soft palate. The mother's uvula was greatly

thickened, and held in place merely by a few adhesions on its right side.

In another female child, aged ten years, was found a central perforation of the hard palate and extensive necrosis of the frontal and nasal bones. She had suffered from a swelling on the forehead and also on the left side of the nose for six months. Her mother admitted the birth of two dead children, but apart from that there was no history,

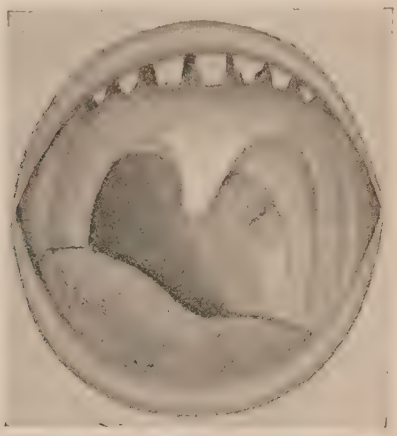

FIG. 16.

Syphilitic teeth and ulceration of pharynx in a child of nine.

nor was there any evidence obtained by a physical examination of the child.

The father of a female child, aged nine years, contracted syphilis six years before her birth. He had not noticed any symptoms of the disease since her birth. He brought his daughter to the hospital because she had a sore-throat. The writer found an ulcer of some depth, with a ragged edge and dirty yellow surface on the lateral wall of the pharynx

behind the posterior pillar of the fauces, extending upwards above the level of the soft palate (Fig. 16). The tissues in the neighbourhood of the ulcer were considerably thickened. Her head suggested cranial bosses, which had become flattened down. Her father stated that no symptoms of the disease were noticed during infancy. She quickly recovered under mercury and iodide of potassium.

The Larynx.

A hoarse cry is an occasional early symptom of congenital syphilis. It may be the only sign. It appears along with the coryza which is the earliest and most constant symptom of the disease. Hoarseness may pass on to complete aphonia. The infant may be seen crying, but not a sound is heard. The symptoms have been attributed to the presence of mucous tubercles in the larynx. As it is impossible to obtain a view of that organ, the explanation is purely conjectural.

In a syphilitic infant of four months the cause was discovered post-mortem. The ary-epiglottic folds were swollen. An ulcer perforating the thyro-hyoid membrane led to a thin-walled cavity underneath the muscles. There was a dorsal ulcer at the posterior third of the tongue. The periosteum above the left knee was thickened. During life the cry was aphonic and the breathing stridulous.

In another child, aged thirteen months, with chronic snuffles and extensive scarring of the mouth and chin, laryngeal whistling was audible all over the chest. She was subject to attacks of laryngeal spasm, and her mother said that she had suffered from 'crowing' on and off for a long time. The crowing was not loud and noisy, as with healthy vocal cords, but, on the contrary, dysphonic. The right upper lobe of the lung was dull to percussion, but in place

of tubular breathing was the whistling previously mentioned. She died suddenly, and post-mortem the epiglottis and aryepiglottic folds were much swollen. Both vocal cords were ulcerated, likewise the ventricular bands. The under surface of the epiglottis was deeply fissured (see Fig. 17). The whole of the upper lobe of the right lung had a grayish appearance: it was firm, slightly granular, and crossed by delicate strands of fibrous tissue.

Frankl's case died of acute stenosis of the larynx when three months old. Necrosis of the cricoid and left arytenoid cartilages and interstitial hepatitis were found after death. Rauchfuss records a few cases, taken from the post-mortem records of the St. Petersburg and Moscow Foundling Hospitals, of deep ulceration and perichondritis in infants two or three months old.

Later in life, rarely in early childhood, but usually about adolescence, the larynx may be attacked either alone or in association with pharyngeal ulceration. Lefferts, Morell Mackenzie, John Mackenzie, Strauss, and others, have added to the literature of the subject. The epiglottis suffers much more frequently than other parts. Ulceration of its edge, with exposure of the cartilage, may be all the damage, but it may be entirely destroyed. Next in order of frequency the ary-epiglottic folds are prone to suffer, and then the posterior laryngeal wall. Other parts are rarely involved, unless the destruction is widespread. The ventricular bands may be thickened, but rarely ulcerated. Warty masses are formed in some instances. There may be general destruction of the superior laryngeal tissues, with subsequent stenosis. The syphilitic ulcer is usually solitary, unilateral, except in the case of the epiglottis, when it is mostly central, deep, and round or oval in outline. It is surrounded by inflammatory swelling, and the destruction of parts is rapid. The symptoms are hoarseness and dysphonia,

FIG. 17.

Syphilitic ulceration of larynx in a child of thirteen months. The larynx has been slightly enlarged.

(*To face p.* 44.)

followed perhaps by aphonia, stridulous breathing, and great dyspnœa.

The Anal Orifice.

Typical condylomata in syphilitic infants within the first few months of life are rare, although a simple thickening of the anal folds, which disappears under treatment, is not so unusual. The writer has not met with more than two or three instances at that age. After the sixth month they are found with greater frequency. The majority of cases that have come under observation have been between the first and third years of life. They are for the most part associated with chronic snuffles. The whole or a part of the mucous membrane round the anus may be involved. The mucous membrane is thickened, raised, perhaps, one-eighth of an inch or so, and is of a grayish-white colour. Numerous more or less deep fissures will be seen radiating across the infiltrated tissue. These fissures divide and subdivide the area into irregular wedge-shaped sections. Or the surface may be raised and moist, with ashen gray points scattered over it. In some cases the hypertrophy of tissues does not involve all its elements equally as is the case in condylomata, but the papillæ suffer the most. Cauliflower-like masses (the mucous wart) will then be found surrounding the anus. Condylomata and mucous warts also occur about the vulva. The neighbourhood of the anus is the usual situation. Dusting with calomel causes their speedy disappearance.

The Lungs.

Depaul, in 1851, was the first to call attention to the presence of yellow indurated nodules in the lungs of syphilitic infants. Gummata, varying in size from a pea to a walnut, are found in the lungs of syphilitic fœtuses and

those dying shortly after birth. They sometimes soften in the centre; they are gray, pink, or red in colour. Fibrous indurations and gray areas of consolidation of varying extent may also be seen; to the latter the name of 'white hepatization' has been given by Virchow. Gummata and white hepatization, rarely associated, may be encountered usually within the first year or so, rarely later. White hepatization may attack part of a lobe, a whole lobe, or even one lung. The lung has the appearance of gray pneumonic hepatization, but, unlike it, is hard and dry. Fibrous bands may be seen crossing its substance.

A female child, aged thirteen months, had ulceration of the larynx, and extensive scarring of the mouth and chin. The right upper lobe of the lung was apparently solid, as all that could be heard over it was loud whistling conducted from the larynx. (Case mentioned on p. 43.) On examination after death the whole of the affected lobe had a grayish, slightly granular appearance and was quite solid; fluid could not be squeezed from its cut surface. It was indurated, and could not be readily broken down; some delicate strands of fibrous tissue were seen crossing it. Adhesions were found over the right lung. Microscopic examination showed the alveoli to be stuffed with catarrhal products, and for the most part to have thickened walls. All over the microscopic sections were areas of interstitial pneumonia, the fibro-nuclear tissue of which was plentifully supplied with vessels. The alveoli were irregular in size, and more or less compressed or destroyed. The septa and overlying pleura were slightly thickened.

Greenfield describes a similar lung condition in a child twelve months old. Symonds' case was a month old, and the affected part was solid and fleshy. On comparing his microscopic sections with those of the author's case, the fibrosis in his infant proved more extensive, and the

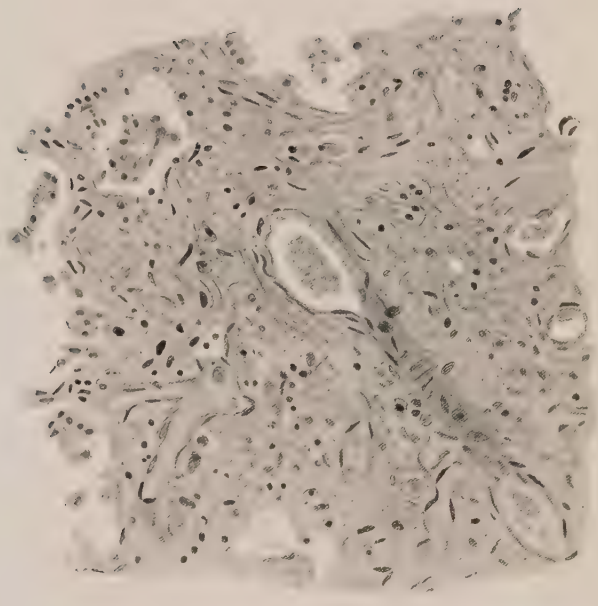

FIG. 18.

Microscopic section of syphilitic consolidation of the lung in a child of thirteen months.

(*To face p.* 47.)

obliteration of alveoli greater. In a child nine months old, who had cutaneous gummata, examination disclosed in the lung a liver-coloured gumma the size of a bean. Another child, aged twelve months, whose brothers and sisters were syphilitic, attended hospital with cutaneous gummata. (*Vide* sketch of cutaneous gummata, p. 30.) For six weeks previous he had been feverish, and there was difficulty of breathing owing to some lung trouble. The writer found the left upper lobe of the lung and the apex of the lower lobe solid. The child remained feverish for some days, and in spite of antisyphilitic treatment wasted and succumbed to the malady some three weeks later. There were thin adhesions over the upper lobe of the lung and upper half of the lower lobe on the left side, and those portions of the lung were red and consolidated. The bronchial tubes were thickened, dilated, and contained muco-pus. Radiating from the bronchial tubes were scars of different sizes passing in various directions, and intersecting the solid areas in varying degrees. The microscope revealed a combination of croupous and catarrhal products in the alveoli.

Alveolar collapse, proliferation of the alveolar walls, and interstitial fibro-nuclear changes complete the description. The appearances were not those of white hepatization, and the fibrin plugs suggest that the onset was acute. The child was suffering from a relapse of syphilis at the time, and the commencing fibroid induration of the lung was no doubt an evidence of the syphilitic cachexia. The writer has met with several instances of extensive consolidation of the lung in syphilitic infants, a condition that has lasted for long periods. In one infant, aged six months, the right upper, middle, and part of the lower lobes of the lung remained solid for eight months, after which time she was lost sight of. Her general condition, however, greatly improved under treatment, and she looked well enough, although slightly rickety.

The Spleen.

According to Gee, who in 1867 first described the presence of splenic enlargement in hereditary syphilis, one-half of the cases are affected. In one-quarter the hypertrophy is excessive, and accompanied by enlargement of the liver and lymphatic glands. Parrot states that, next to the bones, it is the part most often attacked by congenital syphilis. Birch-Hirschfeld found the organ much enlarged in thirty-two cases, but was unable to detect any microscopical changes. Fœtuses, and those dead at birth or dying shortly after birth, provided the material for these statistics.

The organ is enlarged and hard, and is usually found from one to two fingers' breadth below the costal margin. In extreme cases it may extend to the umbilicus, or beyond it in one direction, and in another below the level of the iliac crest. Its lower border can then be felt readily on rectal examination. On section, in exceptional instances, fibrous bands may be seen crossing its surface. Adhesions may take place between its capsule and neighbouring structures. Gummata are exceedingly rare. In the writer's experience it is exceptional to find the spleen enlarged apart from the liver. Of 62 cases during the first six months of life 48, or about four-fifths of the cases, had enlargement of the liver. The following deductions are drawn from 301 splenic enlargements, from all causes, in infants and young children (Fig. 19).

The chart in question is prepared to show at a glance the splenic enlargements, together with syphilis and rickets in association with these cases. In infants there are two great waves of splenic enlargements: the first wave corresponds to the first six months of life, and by the ninth month its volume has decreased by nearly two-thirds. This

is followed by a second splenic wave, which reaches its climax by the twelfth month, and by the eighteenth month has fallen to the level of that of the subsidence at the ninth

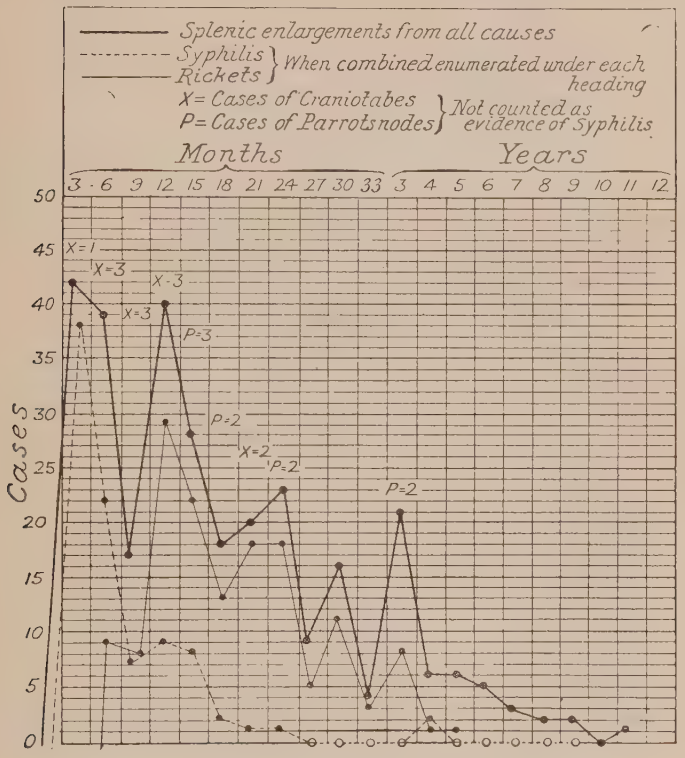

FIG. 19.

month. The crest of the second wave is not quite so high as that of the primary wave. Another slight wave up to the second year, and then the tendency is towards a gradual fall, broken by oscillations, to the zero line. The syphilitic

wave is at its height at the third month, then sinks rapidly to the ninth month, and at that period is found several points below the splenic level. It then gradually subsides, and by the twenty-seventh month is at zero. The rachitic wave, on the other hand, reaches its height at the twelfth and fifteenth months, and sustains its position fairly well until the second year, when there ensues a rapid fall by the twenty-seventh month, with subsequent slight oscillations for the next two years. Two powerful influences are here at work. During the first wave syphilis is largely in the ascendancy, and rickets but a trifling factor; during the second wave syphilis is about three-quarters what it was at the third month, but the rickety wave is now much more in evidence and more powerful than the syphilitic.

In 215 cases of hereditary syphilis, the splenic and liver enlargements have been represented in chart form also. (*Vide* chart, p. 53.) As with the liver so with the spleen: the relative proportion of those affected is greater during the fourth and succeeding months of life than the first three months. The splenic wave is insignificant compared with the great syphilitic wave. From the sixth month onward, as has been seen, the added complication of rickets has to be reckoned with, and this has become a powerful factor by the first year or fifteen months. In the calculation of percentages, therefore, the inclusion of children over six months of age is not justifiable; for when rickets and syphilis are in combination, who shall decide their respective values? Splenic enlargements occur in association with either condition, uncomplicated by the other; hence the difficulty.

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In accordance with these views, the number of splenic enlargements may be estimated to occur in about 40 per cent. of indisputable syphilitics. The finding of such a high percentage as that quoted by Gee is outside the writer's

experience. One author surpasses that estimate by a percentage of 62 per cent., with nineteen probabilities in addition.

The condition may be associated with simple anæmia or with anæmia and leucocytosis. The spleen does not, as a rule, respond so readily to mercurial treatment as the liver, but, like the liver, it eventually recovers under favourable circumstances. The degree of enlargement is considered by some observers to be a gauge of the severity of the disease.

The Liver.

Gubler, in 1852, was the first to describe liver changes in hereditary syphilis. According to this authority, when the structural alterations are marked, the liver is hypertrophied, globular, and hard. On section it creaks as the knife passes through it, and is so elastic that a small piece cut from its substance rebounds on striking the ground. On a yellowish anæmic base a more or less close layer of small white opaque grains is seen, with delicate arborescences formed of empty bloodvessels. If the disease is less marked, the liver is firm, but not yellow, though there may be soft shades of yellow or brownish-red scattered through its substance. The lesions may be circumscribed only. In the writer's cases bands of grayish fibrous tissue intersected the organs in all directions. The changes may be so slight that a microscopical examination is required for their detection. The induration may develop during intra-uterine life.

Gummata are rare, but may occur as circumscribed tumours up to the size of a cherry, and then may present central softening. According to Wagner, miliary lesions may be scattered throughout the organ. Fibrous changes may accompany either of these lesions. Gummata are

somewhat later manifestations. Hudelo* collected forty-seven cases in children over four years of age. The writer has seen the gummatous condition but once. In a wasted child of eight months, who had been under treatment, though unsuccessfully, for some considerable time for congenital syphilis, were found two small nodules in the liver. There was also a small gumma in the left kidney. Amyloid changes may be found with either the fibrous or the gummatous variety of hepatitis. Microscopically the following alterations can be detected: The earliest stage of the interstitial form is swelling of the organ with exudation of leucocytes in groups. The liver is enlarged, but presents few other changes (Hudelo). In marked cases will be found fibro-nuclear changes with destruction of blood-vessels, bile-ducts, and atrophy and fatty degeneration of the liver cells. The capsule may be thickened, and there may be adhesive inflammatory attachment to neighbouring parts.

During life in a limited number of cases the liver is enlarged without the spleen, but when the spleen is enlarged the liver will usually be found increased in size also in about four-fifths of the cases (see p. 48). Of forty-six syphilitic enlargements of the liver, Hochsinger found the spleen enlarged in all except two. The enlargements of the liver in 215 cases of hereditary syphilis have been represented in chart form (Fig. 20). Enlargement of the liver alone is found in some cases. It will be seen that there is a steady rise up for the first three months with a somewhat similar subsequent decline. The proportion of enlarged livers to syphilitics is in comparison enormously increased after the first three months of life. Doubtless gastro-intestinal disturbances are here in a measure responsible, the increase in size being in some instances due to vaso-motor or fatty

* *Monograph*, Paris, 1900.

changes rather than to organic syphilitic infiltration. During the first six months of life 47 per cent. of the syphilitic infants which came under the writer's notice were found to have enlargements of the liver. In the majority of cases the

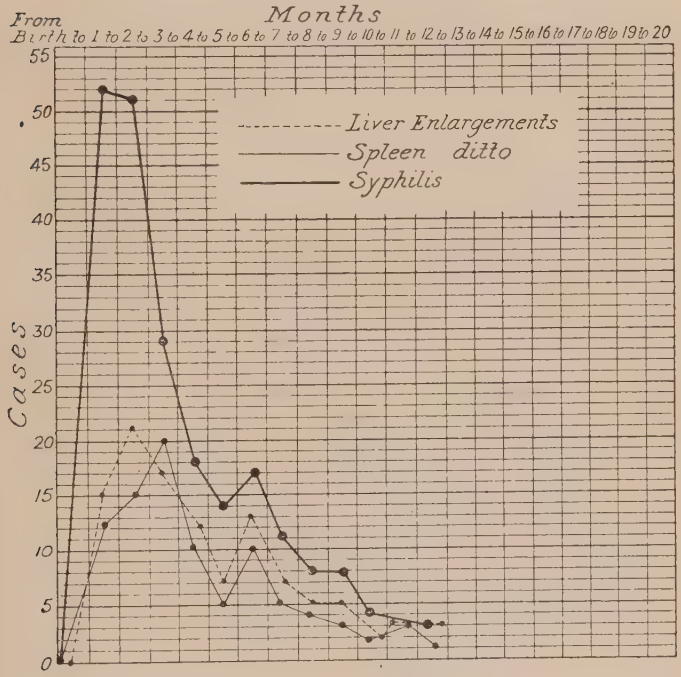

FIG. 20.

free edge of the liver has been felt from one to two fingers' breadth below the costal margin, in the nipple line, and exceptionally for three fingers. If decidedly indurated the free edge is sharp and hard. A child of seven weeks had epiphysitis of the wrists, the knees, the ankles, and an

elbow. There was a macular syphilide. The testicles were indurated as regards the globes and epididymis, and the cords were thickened. The liver and spleen were both enlarged. Under treatment the liver decreased more quickly than the spleen, and both were of normal size within eight months. The liver as a rule responds more readily to antisyphilitic remedies than the spleen. Hochsinger found the shortest time for a cure was from six to eight weeks' time. Goodhart states that he has no note of hepatic enlargement alone, and that in seventeen cases of splenic enlargement five only were accompanied by enlargement of the liver. Apart from the enlargement which is commonly observed in these cases there may be *jaundice*, which is exceptional, and much less frequently *ascites*. Henoch states that specific treatment usually has no effect. He probably is alluding to those more serious cases where the hepatic symptoms are very marked. Certainly in the general run of cases where there is enlargement of the organ without ascites or jaundice this is not so. Goodhart mentions that of a child two months old, who had an enlarged liver and spleen associated with jaundice and ascites. The liver was hard and bossy, and its free edge sharp. The child was pale and wasted, and there were no other evidences of syphilis. It rapidly improved under treatment, and the liver and spleen, the liver particularly, diminished much in size. The liver and spleen remained quite well whilst under observation, extending over a period of four years. An infant subsequently born was an unmistakable syphilitic.

A wasted child, aged four months, was brought to the writer for jaundice, which dated from birth. The motions were white and solid. The liver was two fingers' breadth below the costal margin in the nipple line, its free edge hard and knife-like. The spleen was enlarged to a similar

extent. He had chronic snuffles. The lips were fissured, and about the buttocks and scrotum were some large coppery macules, together with a fading eruption. Treatment proved ineffectual, and he succumbed to the malady. An autopsy was not permitted. The mischief doubtless dated from intra-uterine life. The lesion was probably obliteration of the bile-ducts in its portal fissure with a cirrhotic liver. A case under Henoch, aged ten weeks, with a similar history, also died. The gall-bladder and bile-ducts were found to have been entirely transformed into dense fibrous masses filling the portal fissure. The liver was cirrhotic.

A somewhat similar case to Henoch's, under the writer's care, was born with jaundice, which persisted during life, lasting five months. When he came under observation, he was a drowsy, emaciated infant, with a jaundiced skin and conjunctivæ, an enlarged abdomen, colourless stools, and a subnormal temperature. The liver and spleen were enlarged. The former felt smooth but hard, projected two inches below the costal margin in the nipple line, and terminated in a sharp edge. There was ascites, and a faint trace of albumin in the bile-stained urine. He died in convulsions a few days afterwards. The liver was granular on the surface, and displayed arborescent distended bile ducts. On section the alveoli, which were of a brown colour, were surrounded by strands of gray fibrous tissue of varying density and extent. Inspissated green bile blocked the larger bile-ducts, which were dilated, and in many places was seen to extend to smaller ramifications, which were also distended. The gall-bladder was a fibrous remnant, and the bile-ducts in the portal fissure were replaced by fibrous tissue. Microscopically, the fibrous tissue surrounding the alveoli was filled with tortuous bile-channels containing inspissated bile in connection with a

dense network of bile-filled capillaries enveloping the altered liver cells, which stained badly with reagents, and showed no nuclei (see Figs. 21 and 26*a*).

Syphilitic indurations of the liver occur exceptionally as late manifestations of the disorder, and usually in association with an enlarged spleen. The organ is enlarged, tender, and hard, and may feel hob-nailed. There may be obvious rounded tumours (gummata), or a combination of the two. The absence of cachexia in such a case would suggest the propriety of searching for stigmata and making full inquiries into the history.

The Kidneys.

The literature on the subject of kidney changes in congenital syphilis is small. Nephritis, in association with congenital syphilis, has been described in infancy, and also in adolescence. Bradley reports the case of a child aged four months who had albuminuria and dropsy, and recovered under mercurial treatment. Lancereaux detected interstitial changes with fatty degeneration of the epithelium in large and yellow kidneys. Coupland found an infiltration of small round cells in the kidney stroma of a child of three months.

A female child, aged five weeks, came under the writer's care. She was desquamating about the palms, the soles, and the abdomen. Her mother said a rash appeared at the age of two weeks. There were shallow ulcerations on the lips, also in the gluteal fold from the anus upwards. At the root of the nose was a yellow crust, and similar crusts were found on the ears. On the buttocks were a few umbilicated papules. Finally, there was chronic snuffles. A week later puffiness of the hands was noticed. When the writer saw her again the following week her eyelids were œdematous, white, and waxy-looking. The feet and legs,

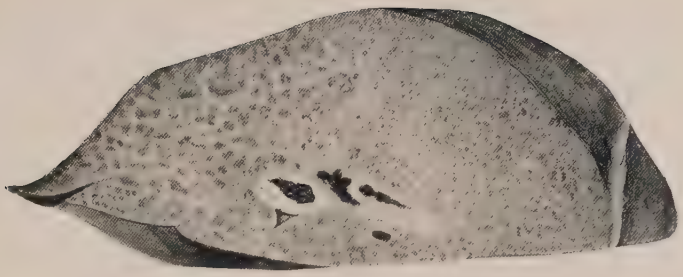

FIG. 21.

Transverse section through cirrhotic liver, slightly reduced in size. For description see text.

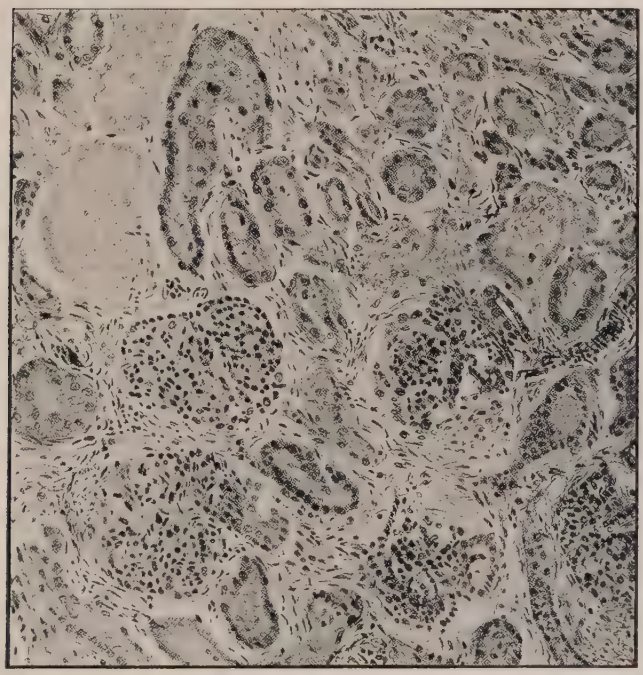

FIG. 22.

Microscopic section of a syphilitic kidney from a female aged five weeks.

(*To face p.* 56.)

the hands and forearms, were much swollen. The urine was albuminous, while hyaline, epithelial and blood casts were observed in it. Post-mortem lobar broncho-pneumonia was found, but the kidneys, which were lobulated, did not reveal any obvious naked-eye alterations. Marked changes, however, were detected on microscopical examination. The lesions were somewhat patchy in distribution, the alterations being both parenchymatous and interstitial. The glomeruli were large and overnucleated, and their capsules in some instances thickened (Fig. 22). In another female child, aged six months, who had an extensive and typical syphilide, there was extreme general dropsy, with some free fluid in the peritoneal cavity. Slight swelling of the extremities had been noticed for six weeks. A catheter was passed, but the bladder was empty. She did not attend again, and disappeared from observation. Parrot found gummata from a pin's head to a cherry-stone, with partial destruction of the renal tubules and colloid degeneration of the epithelium Dupré relates the case of a congenital syphilitic, aged fourteen years, suffering at the time from periostitis and interstitial keratitis, who was found to be albuminuric. The albumin disappeared under mercurial and iodide treatment. Coupland also reported two cases of parenchymatous nephritis in congenital syphilitics, aged thirteen and eighteen years respectively. Fournier says that parenchymatous nephritis and amyloid degeneration are more common than other forms.

The Heart.

Hektoen published a case of interstitial myocarditis in a child of six weeks. In two out of eleven cases recorded death was sudden. They were thought to be in good health at the time.

The Pancreas.

In 1875 Birch-Hirschfeld described certain changes in the pancreas in thirteen out of twenty-five syphilitic infants who were either dead at birth or who died shortly after. These changes commenced, so he thought, late in intra-uterine life. In the most marked examples the organ was twice the natural size, glistening white, and presented the appearance of scirrhus. Microscopically there was an extreme degree of cirrhosis which obliterated the lobules and caused more or less destruction and fatty degeneration of the cells. In others the organs were enlarged, the lobules could be seen, and the interstitial changes, though less, were marked. The head of the organ was more often affected than the tail. Gross changes, such as these, would in part explain the wasting seen in some syphilitic infants.

The Thymus.

We are indebted to Paul Dubois, in 1850, for a knowledge of the lesions affecting the thymus in syphilitic infants. On squeezing the incised gland, about which there is nothing specially characteristic, drops of pus escape from its cut surface. The pus is either disseminated through the organ or collected in small cavities. The natural fluid of the thymus is white, opaline, and transparent, a knowledge of which should prevent error. The children in whom these lesions have been found were either born dead or succumbed to the malady a few weeks afterwards.

The Thyroid.

There are no records on the subject of syphilitic lesions affecting this gland. The following case is therefore of interest: A female child, the first, aged six weeks, de-

veloped 'snuffles' a fortnight after birth. When seen, there were cutaneous gummata in the right calf and left groin, and some red flat-topped papules and macules on the buttocks. The thyroid contained a fluctuating tumour the size of a large grape, which moved with respiration. This was subsequently found to contain pus. The left kidney was in the corresponding iliac region, and freely movable. The child died. The father denied ever having suffered from syphilis, nor was there any evidence of such on careful physical examination.

The Testicles.

Before entering upon a description of the lesions affecting the testicles in hereditary syphilis, a short description may be given of the healthy organs in the young. This information cannot be gathered from the usual anatomical sources, and it is impossible to diagnose some cases without this knowledge. In the first place, the testicles vary greatly in size. They may not be much larger than lemon-pips in some children, whilst in others they are the size of hazel-nuts, and but slight growth is found in them until the age of puberty. Between these extremes the variations are numerous. If the globes are sufficiently large, it is just possible by careful manipulation to obtain a sense of fluctuation. The tension of the globes, in the language of ophthalmology, is about *plus* two. If the skin of the scrotum is sore and infiltrated, as is often the case when the examination takes place, the difficulties are greatly increased. The epididymis is usually boat-like, and there is a feeling of elasticity experienced when it is grasped by the fingers. The vas can be felt as a fine cord. The left testicle is usually the larger of the two, but by no means invariably so, and not infrequently they are equal in size.

At one time it was thought that the testicles escaped in hereditary syphilis, but subsequent observers proved the fallacy of that belief. Original research in this matter by Henoch, Désprès, R. W. Taylor, Parrot, Lewin, Hutinel, and Fournier, has thrown much light upon the subject, and isolated instances of the disease have been published by others. In 1892 the present writer published an article and narrated 18 cases. Since that time those observations have been extended—altogether he has met with 75 cases in which evidence was obtained of departure from the normal in varying degree.

Dr. Henri Seringe* has made an exhaustive study of the testicle in hereditary syphilis. He concludes, from a study of 164 cases, that it may arrest the descent of that organ, and be concerned in infantilism. He states that hydrocele, hitherto considered rare, occurs in a quarter of such syphilitic testicles, thus confirming the writer's observations previously published on this subject.

The most common complication in syphilitic infants is hydrocele. This is usually not great in amount, and may be unilateral or bilateral. Sometimes it is extreme, and the organ may be the size of a bantam's egg. The presence of the fluid complicates an examination of the organ, and often renders it impossible. In these cases the cord may sometimes be found enlarged, and exceptionally the vas. When the fluid is absorbed, or otherwise dealt with, the underlying organ is sometimes found to have undergone unmistakable structural alterations. If there be no enlargement of the testicle (and absence of enlargement does not contra-indicate disease), the diagnosis must be made on the evidence obtained from a careful physical examination. In place of the normal testicular tension of the globe there will be

* 'Le Testicle dans la Syphilis Héréditaire,' Dr. H. Seringe, Paris, 1899.

FIG. 23.

Section of a syphilitic testicle from infant aged six weeks, magnified five times. *Vide* Case 16, p. 101.

(*To face p.* 61)

found a feeling of hardness which has been likened to that of scirrhus. So with the epididymis: it may be indurated as a whole or in part.

It is during the first four months of life that hydrocele is common, and that the various changes described in the consistency of the organ can be detected. All gradations will be found, varying from a hardness that is unmistakable to a condition which merely raises the suspicion of tissue infiltration. At the same time, on the other hand, obvious enlargements sometimes occur during this period. When the organs are enlarged the difficulties of diagnosis are reduced to a minimum. They may reach the size of a filbert, of a chestnut, or a French plum, and even that of an egg, but the last is rare.

After the first four months of life cases are met with occasionally up to two or three years of age. Fournier's case of twenty-four years of age, up to the present, seems to be the extreme limit. I have seen it once in a boy of twelve, who quickly recovered under iodide of potassium. The testicle was large as a whole, and the epididymis could not be differentiated as a separate body. The cord was thickened, and the vas decidedly larger than its fellow. The seminal vesicle was natural. Contrary to the usual condition, the organ was a little painful.

The globe is more often than not attacked alone. Not infrequently the globe and epididymis suffer together. Quite exceptionally the epididymis alone is attacked. The disease is often one-sided in its distribution, but occasionally both organs are involved, and then the pathological changes are more advanced in one than the other, while hydrocele may or may not be present. The organ may be smooth or nodular, and a fungus testis is sometimes seen. Fagge calls attention to nodular swellings —doubtless gummata—which he has seen on children's

testes, but the writer has as yet not met with this condition. The cord may be as large as the little finger, but so great an increase is rare. Less common still is thickening of the vas, and the writer has found it as large as $\frac{1}{12}$ or $\frac{1}{8}$ inch in diameter. He has never found the seminal vesicles enlarged, and up to the present time there appears to be no such case on record. Encysted hydrocele of the cord in syphilitic babies has occurred three times in his experience.

In the majority of instances the microscopical appearance of enlarged testes is that of the simple inflammatory form, passing on to the development of fibrous tissue with subsequent destruction of the gland. Impotence and sterility are then the result. Certain atrophied organs found in later life may be accounted for in this way. The inflammatory form is akin to that seen in the liver. Gummata are rare manifestations, but Mr. Abbott has recently met with a case at the Evelina Hospital in a syphilitic infant nine weeks old. There was a large broken-down gumma in the epididymis.

Syphilitic may be confounded with tuberculous orchitis. Tuberculous testicles have been found in infants from a few days old (Giraldés) and onwards, and there is a case on record of congenital tuberculous testis (Dreschfield). As in syphilis so in tuberculous disease—the globe, the epididymis, the cord, and vas may suffer. So far the prostate and vesiculæ seminales appear to be singled out by tubercle, but extended observation will possibly prove that even these situations are not altogether free from syphilitic attack.

The diagnosis between the two may, indeed, be impossible, for a tuberculous testis may be found in a typically syphilitic infant (Stoeber).

It is sufficient to remember the fact that the diseases are sometimes clinically indistinguishable, but that in syphilitic

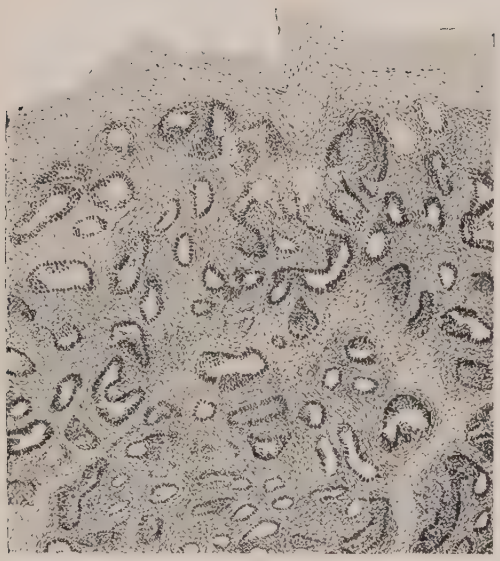

FIG. 24.

Microscopic section of a syphilitic testicle from an infant aged six weeks. *Vide* Case 16, p. 101. In the healthy organ the seminal tubules, here seen in section, are close together, and the amount of areolar tissue investing them is small. Observe the thickened tunica albuginea and the large quantity of fibro-nuclear tissue between the tubules.

(*To face p.* 62.)

infants the probabilities are in favour of syphilis. The response to treatment will be found of value in forming an opinion in a doubtful case. Further knowledge of the subject is required before a trustworthy scheme of differential diagnosis can be arrived at.

The Blood.

Syphilitic infants are not always anæmic, especially when breast-reared. It is not every such infant that develops the *café-au-lait* tint of skin which is so obvious about the face. On the other hand, anæmia may be the only manifestation of the disease. In one striking case under the writer's care the mother had a gummatous ulceration of the soft palate, but the only evidence of hereditary taint that could be obtained in the child was an intense anæmia, which readily responded to mercurial treatment. According to Loos, the red corpuscles are diminished. Megalocytes, microcytes and nucleated erythrocytes are found on microscopical examination, and leucocytosis of varying extent is present.

The changes in the blood—the oligocythæmia and oligochromæmia, the increase or not of leucocytes, together with the absence of those blood changes peculiar to chlorosis, pernicious anæmia, anæmia pseudo-leukæmia (Von Jaksch) and leukæmia—are those found in an ordinary secondary anæmia, and there is nothing characteristic of syphilis about them. Similar appearances in the blood are met with in the secondary anæmia of rickets, and rickets is specially prone to develop in those with hereditary taint.

Syphilis Hæmorrhagica Neonatorum.

This happens at birth, or shortly afterwards. Hæmorrhages occur in the sikn or subcutaneous tissue, or in the

mucous membranes or from their surfaces. Epistaxis and melæna thus arise, and sometimes hæmaturia. Hæmorrhage may take place in the viscera or in serous cavities, or from the umbilical cord.

Epiphysitis (Osteochondritis of Wegner).

In 1870 Wegner of Berlin described certain pathognomonic changes which he had found at the junction of the shaft and epiphysis in syphilitic infants. The literature on this subject has been subsequently enriched by Waldeyer and Köbner, Parrot, R. W. Taylor, and Kassowitz. In the earliest stages of the disease, in the layer of cartilage next to the bone, will be found proliferation of the cartilage cells whereby an irregular zone of thickening is produced. This zone increases in extent, and tapering processes are projected into the hyaline matrix, which becomes attenuated. On the bone side are seen corresponding depressions into which the spongy bone passes. In the proliferating cartilaginous layer calcification progresses apace, and the cartilage cells are imprisoned. True bone may sometimes be found passing into this from the neighbouring shaft. This layer soon becomes brittle, and is of mortar-like appearance, while the epiphysis increases in size. The neighbouring periosteum is attacked, and the consequent thickening extends some little way up the shaft of the bone, maybe a quarter or a third of its extent, perhaps less. Between the shaft and the brittle proliferating zone just described will now be found a soft cellular layer of yellow or yellowish-red colour, of irregular outline, plainly visible to the naked eye, which is pathognomonic. It is at this junction that the shaft is liable to part company with its epiphysis, as indeed sometimes happens.

In most still-born infants, or those dying shortly after

birth, the majority or all of the epiphyses of the long bones are said to be affected. In children the arms and forearms, the thighs and legs, are the most likely to suffer, but any of the bones may be implicated, as the costochondral junctions or the clavicles. The ends of the bones involved are enlarged and painful. A collar of enlargement, sometimes limited to one side, is found at the junction of epiphysis and shaft. The whole of the epiphysis may be expanded. When, owing to periosteal implication, the enlargement extends some little distance up the shaft, as is often the case, the distinction between this and the rickety bone end is obvious. When there is no periosteal implication, we must trust to other evidence. Syphilitic epiphysitis usually occurs at an earlier age than rickets. If one joint only be involved, there can be no doubt as to syphilis being the cause, but if more than one the clue may be derived from treatment. If there be no beading of the ribs so much the better, but beading of the ribs is so common in both diseases, that too much reliance must not be placed upon this sign, especially if there be otherwise no pronounced symptoms of rickets. Anything in the shape of obvious rickets in the first few months of life—four or five say—is so unusual that it may, for practical purposes, be considered as almost non-existent.

Syphilitic epiphysitis is usually symmetrical, and multiple epiphysitis is most often observed. Separation of the epiphysis occasionally occurs, and in such a case crepitus may be obtained. The overlying skin rarely ulcerates, but should this happen the separated epiphysis may be extruded. In the event of separation the parts will reunite under treatment, and there may remain nothing to tell the tale of such an accident. If there has been great destruction of cartilage the bone will probably be permanently shortened. The neighbouring joints may be implicated. Effusion into them

may be simple, but quite exceptionally they may contain pus. The joints most likely to suffer in this way are the elbow and knee. The added contamination of pyogenic organisms not only determines suppurative arthritis in these cases, but may lead to acute osteomyelitis with necrosis, or to the formation of abscesses about the parts. Epiphysitis is usually found, in my experience, during the first three months of life; Taylor says at birth, or within the first month of life, and as late, even, as the twelfth year. The oldest case seen by the author was seventeen months; both elbows were involved. In a child of seven months both knees and elbows suffered, and there were tibial nodes, and in another of the same age both knees. It is not unusual to find epiphysitis as the sole manifestation of hereditary syphilis. The disease may occur in children who have acquired syphilis.

The local condition often causes weakness of the affected limbs, perhaps complete immobility or muscular wasting. If the shoulder be involved, the arm hangs by the side, the elbow is turned out, the palm of the hand points backwards and outwards, and the condition suggests Erb's paralysis (Fig. 25).

Should separation of the epiphysis occur at the wrist, the wrist drops. The paralysis is supposed to be due to the pain occasioned by the epiphysial and periosteal lesions, and the subsequent wasting of muscles to want of use. The condition has been named 'pseudo-paralysis' by Parrot, to distinguish it from paralysis of neural origin. The muscles react normally to galvanic and faradic currents. Henoch describes cases of paralysis in syphilitic infants free from epiphysial lesions, and the writer has met with two cases. Peripheral neuritis may possibly be held accountable. Further observations are required. Chapin narrates a case, aged four weeks, suffering from pseudo-paralysis, in

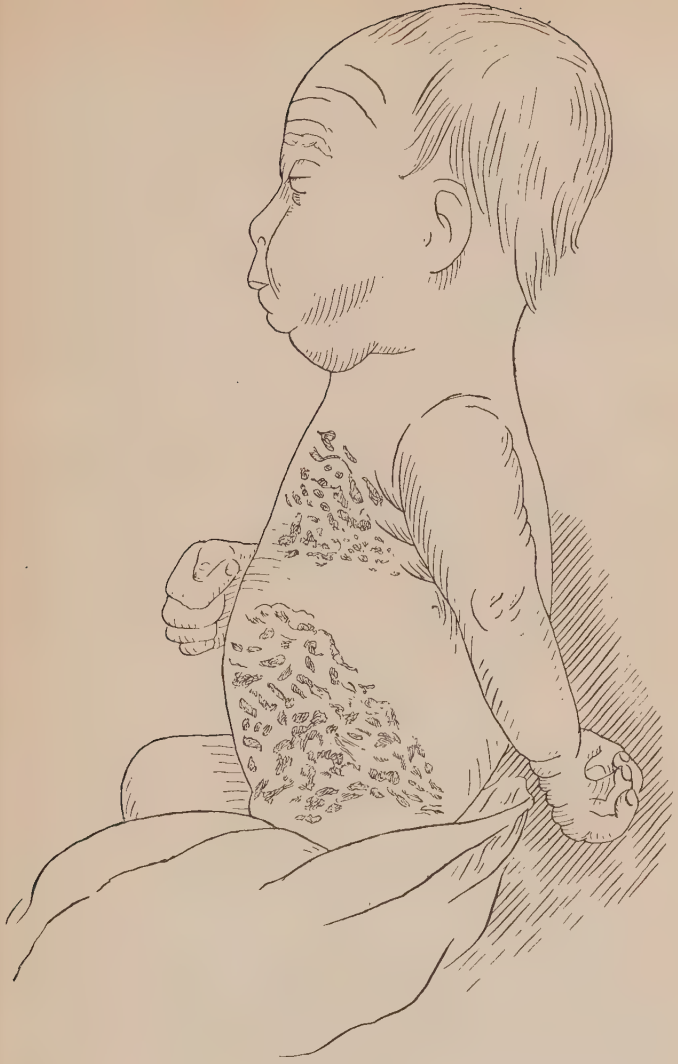

FIG. 25.

Male, aged three weeks. Syphilitic epiphysitis of the left shoulder (arm paralyzed); electrical reactions of muscles natural; liver and spleen enlarged: palms and soles peeling; abdomen and chest desquamating; snuffles.

which there was syphilitic interstitial myositis. The affected muscles were hard, and painful to the touch. Henoch also gives a somewhat similar example.

Without enumerating cases of doubtful epiphysial enlargements in syphilitic infants (a not uncommon condition), the writer's cases yield twenty-one undoubted instances of the specific complication. Periosteal thickening of the shaft of the bone, starting from the epiphysis, has been looked upon as pointing to epiphysitis, but it is not absolutely confirmatory. Thus, in one of his cases, aged four months, periosteal implication was found in that situation without an obvious post-mortem lesion of the epiphysis. Most of the cases suffered from multiple lesions, and the majority were symmetrical. Of 41 epiphyses involved, there were 15 elbows, 11 wrists, 10 knees, 3 shoulders, and 2 ankles. In one child, a month old, the carpus was involved. Only one had a separated epiphysis, and that was at the wrist. In some of the cases of knee and elbow implication there was periostitis of all the neighbouring bones; in others, in the case of the knee, the femur, or the tibia only.

Periostitis.

Apart from epiphysial involvement in infants under six months of age, nodes are not common, but the writer has seen instances. In a child of four months there was periostitis of the whole of one femur, and also a node in the middle of the left tibia. In another, aged six weeks, there was suppurative periostitis of the left femur. In another, aged three weeks, with epiphysitis of the wrists, one femur was thickened. In another, aged seven months, there were tibial nodes in the middle thirds of the bones; the elbow-joints were both involved, and there was marked thickening of the femora above the knee-joints. In another, aged

twenty-one months, one femur was thickened for one-fourth of the way up the shaft. Among older children there were several instances, for the most part tibial nodes. The bones most frequently affected are the humerus and tibia. Ulnar and radial nodes are less common. The spinous fossæ of the scapulæ and the external iliac fossæ are also favourite situations. The nodes consist either of highly vascular and spongy bone or are fibro-vascular or a varying combination of the two processes.

Syphilitic Dactylitis and Swellings of the Metacarpal and Metatarsal Bones.

One or many bones may be involved. In the former case the proximal bones are more often affected than the distal. The bones are swollen to two or three times their natural size. The skin is implicated secondarily, and an abscess may form, leading to fistulous openings in the already swollen members. The hands are much more liable to attack than the feet. The writer has notes of but two instances of dactylitis—one in a boy of two, whose index-finger was involved; the other in a child of nine months, with implication of the big toe—and one of swelling of the metacarpal bones in an infant of one month. The disease is likely to be confounded with tuberculous mischief, to which it bears a close resemblance, and which is not uncommon.

Other Bone Lesions.

Amongst other lesions seen about the period of puberty are osteitis and osteo-periostitis, mostly of the long bones. The affected bone is often bowed as well as thickened, and the medullary canal obliterated. In the absence of premature ossification of the epiphysial line the bone may

grow in length as well as in circumference; otherwise it is permanently stunted. Slight injury to the sclerosed bone is apt to determine local necrosis. Subperiosteal abscesses, which burrow and leave fistulous passages between skin and dead bone, are not infrequent. The lesions are often symmetrical, and several bones may be attacked. The tibiæ are prone to suffer. It is not always easy to distinguish between tuberculous and syphilitic osteitis. Tuberculous disease, however, displays a partiality for the short bones and the neighbourhood of joints.

Chronic snuffles is apt to be followed by necrosis of the bones supporting the nasal arch, with consequent depression of the nasal bones. This accident leads to the broadening and sinking-in of the root of the nose which is so suggestive of hereditary syphilis. Of other later manifestations situated in this neighbourhood may be enumerated destruction of the hard palate in greater or less degree from gummatous osteitis, exfoliation of the vomer, turbinated bones, and cartilaginous septum, and in extreme cases disappearance of the nasal bones, with loss of the nose and neighbouring cutaneous structures. A girl aged ten years, under the writer's care, had perforation in the centre of the hard palate, and extensive necrosis of the frontal and nasal bones, but recovered under antisyphilitic treatment.

The author has seen an extensive syphilitic necrotic caries of the skull in a boy of ten, who recovered under treatment. There were several sinuses in the scalp discharging pus, the vertex in some places being soft, while in others the bone was exfoliating. Jonathan Hutchinson, Senior, relates the fatal case of a boy, aged twelve, whose skull had been laid bare in many places by suppurating nodes. He eventually died of the disease.

Cranial Bosses or **Parrot's Nodes**, named after M. Parrot, who first advocated their syphilitic origin, are

characterized by the growth of a lens-shaped, velvet-pile-like layer of soft, porous, and very vascular bone on the cranial vault, leading to a peculiar and characteristic bossing. The regions most commonly attacked are the frontal and parietal bones around the anterior fontanelle, which may be closed or present varying degrees of patency. In this way the suture lines, which are not involved, form, according to the quantity of osseous deposit, more or less deep furrows between the mounds of new bone. Thus a peculiar deformity of the skull is produced, which has been aptly termed the 'hot-cross-bun skull.' This is readily noticed from a distance, and sometimes the nodes show a bluish coloration through the scalp. Next in frequency of occurrence is bossing* of the frontal bones, producing a characteristic buffer-like forehead. The parietal bones are not often involved alone. With the hot-cross-bun skull, or with frontal bossing, may be found involvement of the temporals or the occipital, and sometimes these bones are attacked to the exclusion of the others. Osseous deposit round about or over the site of the anterior fontanelle is not uncommon, and sometimes the nodes are placed quite irregularly. In three instances the writer has found the condition in association with craniotabes: once in the parietal and right temporal, once in the occipital and parietal, and once in the occipital, the last only slight in degree. In the course of many months or years they either undergo absorption, or, gradually flattening down, they lead to an increased thickening of the cranial vault by the addition of spongy bone. Under the author's care is a little girl whose head is still most typical of the condition notwithstanding prolonged antisyphilitic treatment for the last six years. In the later manifestations of hereditary syphilis at the approach of puberty, this peculiarity of the skull may sometimes be detected, and the

* See frontal bosses in frontispiece.

former sites of the nodes may be mapped out with more or less readiness.

Many careful observers consider cranial nodes an evidence of rickets, and in no sense connected with syphilis. In the subjoined table will be found a series of 40 cases that came under the writer's personal observation, together with the evidence in favour of rickets or syphilis in tabulated form. By keeping a careful record of cases of rickets, of syphilis, and of splenic enlargement, and by indexing the names and addresses of the patients, it has been possible to pronounce as undoubtedly syphilitic several cases which would have otherwise escaped detection.

	Months of Age.																			Years.		
	3	5	11	12	14	15	16	17	18	19	21	23	24	25	26	29	30	32	36	9	11
Cases of Parrot's nodes, the ages at which they attended	1	1	2	4	3	6	2	1	1		1	1	6	1	1	1	1	1	2	1	2
Splenic enlargements associated with above	1	0	1	0	3	3	1	1	1	0	0	0	4	0	1	0	1	1	2	0	0
Syphilis	1	1	1	1	1	2	0	1	0	0	1	1	1	0	0	0	0	1	0	1	2
Chronic 'snuffles'	0	0	0	2	0	2	0	0	0	1	0	0	2*	0	0	0	0	0	1		
A history with 'snuffles'				2		1	0						1								
A history without 'snuffles'					2	1?							1			1†	1				
Beaded ribs		1		1																	
Slight rickets						1	?														
Rickets				2	0	4	1	1	1				2						1†		
Rickets marked			2	1	1	1				1	1	1	3				1		1		
Rickets very marked					2								1	1	1	1	0	1			

* The mother of one of these children was herself a congenital syphilitic.
† Suffered from adenoid vegetations

It is certain that rickets is not an essential factor in the production of Parrot's nodes, for these may occasionally be produced when rickets is absent or but slightly marked. The majority of patients, however, are more or less the subjects of rickets. A large proportion of cases are undoubtedly syphilitic, and if it be conceded that chronic snuffles is a valuable diagnostic sign of congenital syphilis,

then the proportion becomes still higher. In a certain number, where the physical evidences of congenital syphilis are wanting, a more or less convincing history of that disorder may be obtained on inquiry by examining a younger member of the same family. Histories alone are apt to be misleading, whether they be taken as evidence for or against, as the case may be. All experienced observers will admit that after the first six months of life it becomes increasingly difficult to obtain unimpeachable evidence of syphilis. By one year of age the syphilitic wave, at its height during the second and third months, is well-nigh spent, though it continues feebly for some twelve months or more. After the second year cases are seen occasionally. In other words, the older the child the more difficult does it become to obtain certain evidence of syphilis. The rickety wave at six months of age is just beginning to make headway, and between the first and second years of life may be considered to attain its maximum. From that time it gradually subsides, and practically ends at the termination of the fourth and fifth years, though even after that period cases may occasionally be seen. The majority of cases of Parrot's nodes come under observation during the first two years of life—that is to say, well within the rickety sphere of influence. But what is more striking still is the fact that, in spite of the feeble evidence of syphilis usually found at that period, so large a proportion of children actually syphilitic are brought to notice in association with rickets—in the writer's experience 57·5 per cent.

The foregoing evidence speaks for itself and makes it, to say the least, probable that the other cases are syphilitic also, though it is impossible to detect the taint with certainty. The author's statistics have been drawn from a little over 600 cases of syphilis, and from several thousands of rickety children attending hospital either for that disease or for

some intercurrent complaint. Parrot's nodes are rare, therefore, and in cases of rickets pure and simple they are an uncommon complication—in the writer's experience less than 1 per 1,000. A not altogether uninteresting observation is the fact that half the number of cases were the subjects of splenic enlargement, although this additional factor does not materially aid in the solution of the question, as between the syphilitic or the rachitic origin of the disease. Syphilis is an energetic bone-producer, and we occasionally meet with instances of periosteal thickenings of the long and short bones at these periods of life which are justly considered to denote a syphilitic origin. One of the writer's cases had a thickened femur concurrently with the cranial osteophytes, another an enlarged phalanx. There is no valid reason for excluding the skull bones from the osteal disabilities recognised in the extremities, but, on the contrary, every reason why they should be so included. Rickets, unlike syphilis, is an energetic cartilage-producer.

The writer is inclined to the view that the affection is a syphilitic manifestation often occurring in a rickety subject, and, further, that its advent seems favoured by the co-existence of rickets even though it may be not very marked in degree. Some, indeed, think that these osseous deposits can be caused by either rickets or syphilis, but the supposition that the manifestation is a purely rickety one is not tenable. However, the writer has given the facts as he has found them, and it is open to all to draw their own deductions from the material provided.

Craniotabes consists in a localized thinning of the cranial vault, so that when moderate pressure is made on the atrophied spots with the thumb or forefinger the bone dents with a stiff, crackling sensation. The sensation resembles that produced by pressure on stiff parchment. If the dura mater be stripped from such a bone, the internal

FIG. 26.

Syphilitic liver (p. 55).

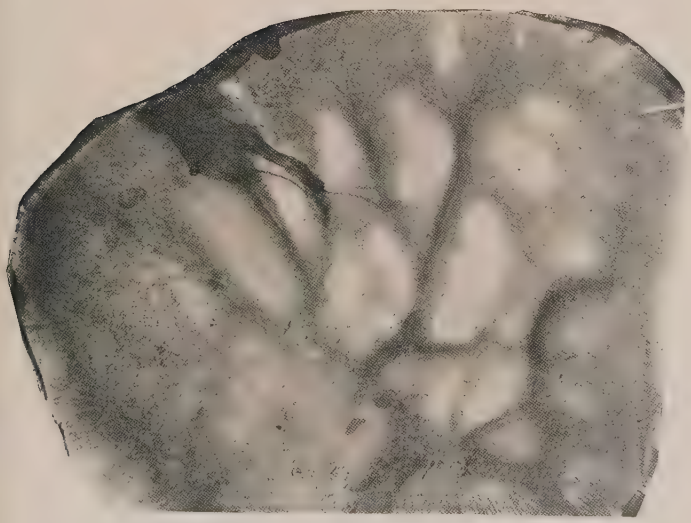

FIG. 26*a*.

Craniotabes, parietal bone.

(*To face p.* 74.)

table will be found atrophied in certain localized situations denoted by round or oval pits from $\frac{1}{10}$ to $\frac{1}{4}$ inch or more in diameter. In extreme cases the outer table may also suffer, so that nothing is left but a membranous septum, which feels during life like a hole in the skull. If the bone be held up to the light, the wasted areas are readily seen (Fig. 26). The thinning of the cranial vault is sometimes so extreme and so extensive that it can be readily cut with a pair of scissors. Contrary to what is usually taught, the occipital bone is least often affected singly; it was thus attacked in less than 3 per cent. of the author's cases. The parietals were most frequently involved alone, namely, in over 60 per cent. If the parietals be counted with other bones, then they were affected in about 95 per cent. of the cases. The atrophy commences behind the parietal eminences, which are sometimes gradually invaded, or the whole of the parietal bones may be involved. With the parietals the occipital may be attacked, or the squamous temporals, the former rather more frequently than the latter. Rarely the frontal is also involved, but this bone is never attacked singly. The lesions are, as a rule, roughly symmetrical, but not infrequently one side of the cranial vault is more involved than the other, perhaps exclusively so, and sometimes the lesions are irregularly placed. The disease was first described by Elsässer in 1843, and was held to be a sign of rickets until M. Parrot and other observers questioned the truth of the original view. Of late years many have been in favour of the correctness of the original observation. In 1889 the writer published an article on the subject, and arrived at the conclusion that 74 per cent. of the cases were syphilitic. The disease has been found in rickety monkeys (Sutton), a source free from syphilitic contamination, a fact that appears to settle the question in the affirmative as regards rickets. It certainly does so as regards monkeys, but it is questionable

whether simian pathology accurately gauges apparently similar human disorders. The facts of the case are as follows: The author's deductions are drawn from 238 examples. The great majority of the cases are found within the first four months of life. They are exceedingly uncommon from the ninth month onwards, and sink to zero at the sixteenth month; but two instances of the disease were met with at the twentieth and twenty-first months of life. Between the first and second years of life, when the rickety wave is at its height, craniotabes is barely in evidence. Thus, craniotabes is quite an uncommon manifestation when the children are most rickety. It is, to say the least, strange that this should be the case if the disorder is to be attributed to rickets. On the other hand, the syphilitic wave follows the craniotabic with a fidelity which is most striking. Below will be found a self-explanatory analysis of the cases in chart form. A slight rickety curve will be noticed between the first and fifth months of life. It is more than probable that the majority of these joint enlargements were syphilitic, though it was impossible at the time to pronounce them so owing to absence of periosteal thickening in connection therewith. If, however, slight beading of the ribs be taken as sufficient evidence of rickets, then they were rickety with few exceptions. Such a relegation, in the absence of other signs, is most misleading, and does not fairly state the case (Fig. 27).

A common combination is that of chronic snuffles, as the only evidence of syphilis, with craniotabes, and in some instances there is the added one of implication of the testicles. In a boy, two months of age, craniotabes and snuffles were the only evidences of syphilis. His brother presented a typical and extensive ringed syphilide at five months of age, while all the cranial bones were involved. In another child, aged five and a half months, the subject

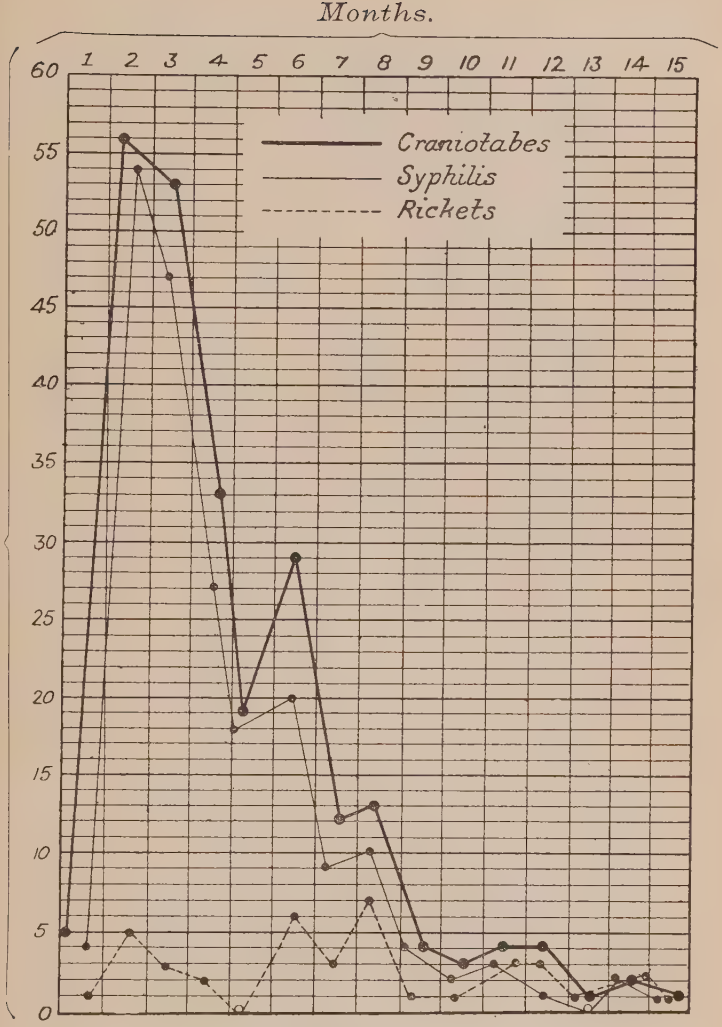
Months.
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
60 55 50 45 40 35 30 25 20 15 10 5 0
Cases.
Craniotabes
Syphilis
Rickets

FIG. 27.

of chronic snuffles, all the cranial bones were involved except the frontal. His sister, aged four years, had gummatous ulceration of the soft palate. Several instances of a like nature might be added. Nor is chronic snuffles always present, for the writer has seen a child of two months with no other sign than marked craniotabes of the right parietal bone, whilst the mother had a squamous syphilide of face and body. In another instance he knew the mother to be syphilitic, and watched her infant carefully for syphilitic manifestations; but the only indication he found was craniotabes, which readily responded to mercurial treatment. In the author's experience, the most extensive craniotabes has not been where the syphilitic taint has been strongest, but, on the contrary, heavily stricken syphilitics seem less likely to suffer in that way. Some cases recover quickly under mercurials, and others less readily. In some instances the craniotabes disappears and the rickets persists, or even increases; in others the atrophy of the cranial vault continues for several months. Craniotabes may apparently be an evidence of rickets apart from syphilis, but the presence of craniotabes in a child should excite a strong suspicion of syphilis.

Synovitis

is one of the late manifestations, and usually attacks symmetrical joints, the knees by preference. The effusion is painless and chronic, but amenable to treatment. It is sometimes associated with interstitial keratitis. This was the case in a boy of six who had synovitis of both knees. Synovitis may also be associated with neighbouring osteitis, or be caused by a gummatous inflammation of the synovial membrane. The writer's colleague, Mr. Abbott, had a child of nine weeks under his care suffering from gummatous

epididymitis, and a knee-joint distended with serous fluid. When the latter was opened there was gummatous thickening of the fringes.

Nervous System.

Affections of the nervous system have been found at all ages from infant to adult life. At all times they are uncommon, and especially so during the early stages of the complaint. The majority are due to structural alterations in the nervous system, but in others this is apparently not the case. Persistent headaches with nocturnal exacerbations have been described by Fournier, and many think that some cases of epilepsy are syphilitic. Convulsions are not uncommon, and congenital syphilitics not infrequently die in that way. In some, however, the convulsions are secondary to organic mischief. Hydrocephalus is in some cases syphilitic, and is thought to be due to inflammation of the ependyma and plexuses of the ventricles. From the published records, this would seem not to be exceptional.

A child of eleven months, brought to the Evelina Hospital for frequent convulsions, had an enlarged liver and spleen, 'snuffles,' dating from birth, and hydrocephalus. Later, cutaneous gummata developed on the buttocks. Under mercurial treatment the fluid in the ventricles disappeared. At the age of two years the child was rickety, with a widely opened fontanelle.

Barlow has described two cases of organic disease in infants. In one child, aged four months, who died in convulsions, there was choroiditis, general meningitis and cerebral endarteritis. In another, aged fifteen months, double facial palsy and laryngeal spasm were present, without convulsions, and symmetrical gummata were found on the third, sixth, seventh, and eighth nerves, as well as cerebral

endarteritis. In Chiari's case, a child of the same age, there were chronic meningitis, endarteritis, and small spots of yellow softening. Henoch's case, aged two years, had multiple gray-coloured gummata, the size of cherries, under the pia mater, and in different parts of the cerebrum and cerebellum. In Angel Money's case there was sclerosis of the left hemisphere, without arterial disease.

A female child, aged five and a half months, was 'perfectly healthy when born.' It was the second child, the first having been born dead. At the age of one month 'snuffles' commenced, and one morning about that time she became convulsed. The fit began by a sudden movement of the left arm, which subsequently spread to the rest of the body. The head was thrown back, and remained in that position. At two and a half months she was taken to a doctor, who said she was blind. When seen by the writer she was fairly nourished, but had 'snuffles,' a sunken bridge to the nose, a retracted head, and a macular eruption on the buttocks. The fists were closed, the arms flexed and held rigidly to the sides. The toes were flexed, the thighs flexed on the abdomen and the legs on the thighs. Disseminated choroiditis was found in both eyes. She had broncho-pneumonia. Post-mortem there was sclerosis of both hemispheres, involving the gray and neighbouring white substance. The sclerosed areas were partially cystic and loculated, the loculi being filled with clear or opalescent fluid. Their walls were as if peppered with lymph. There was no trace of blood or blood crystals. Where not cystic the sclerosed area was dense and hard on section. All the motor areas were involved in both hemispheres, together with the superior frontal convolutions and a part of the right temporo-sphenoidal lobe, but the left hardly at all. The arteries at the base were healthy.

Syphilitic Meningitis is an occasional occurrence. By

its symptoms alone it is impossible to distinguish it from tuberculous meningitis. In forming a diagnosis, reliance must be placed, not on its symptoms, but on any indications of congenital syphilis that may be found on a careful examination of the patient. Whilst hemiplegia is not uncommon, the syphilitic variety is decidedly so. The onset of the paralysis may be attended by convulsions, or by loss of consciousness only, or by an attack in which vomiting is a prominent feature. The cases are probably examples of syphilitic endarteritis. Vascular disease produces palsies, from degeneration of the cortical areas, corresponding to the occluded vascular supply. Spastic paralysis may follow subsequently.

Cerebral Gummata are exceedingly uncommon. Of 299 cases of cerebral tumours under nineteen years of age collected by M. A. Starr, there was but one case, and that in a youth of eighteen. J. Hutchinson, Junior, described in the occipital lobe of a boy of fourteen a large gumma which produced a meningocele. Paraplegia has been described due to a growth of new bone from the spinal column producing pressure symptoms (Fournier). Other cases have been described supposed to be due to congenital syphilis, but verified diagnoses are wanting.

Of **Peripheral Neuritis** there are several cases of ophthalmoplegia externa recorded in young persons. Excluding Barlow's case of symmetrical gummata, there are also examples of disease of the fifth and seventh nerves. A fusiform gumma on the left median nerve has been narrated by Ormerod. It caused anæsthesia and paralysis of the parts supplied by the nerve.

Of other recorded lesions may be mentioned pachymeningitis hæmorrhagica and locomotor ataxy.

Idiocy.—Of 500 cases at the Royal Albert Asylum for Idiots at Lancaster, Telford-Smith found only three

acknowledged cases of congenital syphilis. Eight cases presented undoubted stigmata, and others were probably luetic. All the statistics point to the fact that congenital syphilis is answerable for but few of the cases of the kind. The syphilitic cases usually resemble the birth palsies. They have spastic paralysis, are mentally defective in varying degree, and often suffer from fits.

Special Senses (Ear).

Middle-Ear Disease is not uncommon in syphilitic infants, and is due to extension up the Eustachian tubes of the specific naso-pharyngeal catarrh. Inflammation of the middle ear, pus formation, and rupture of the drum-head, follow in quick succession. The writer has seen several cases within the first month of life. Two such children, one eight, and the other four months, developed right facial paralysis. In the former, behind the right ear the skin was discoloured over an area the size of a two-shilling piece, and perforated in its centre. The underlying bone was carious, and there was a sequestrum the size of a shilling. The dura mater was healthy.

Nerve Deafness is usually found in cases from eight to twenty-five years of age, and is therefore one of the late manifestations of the complaint. It commences in one ear, subsequently the other is involved, and it is characterized by its insidious onset. It is usually preceded by interstitial keratitis, but sometimes followed by it. Chronic osteitis of the internal auditory meatus and the bony labyrinth, with more or less obliteration of these parts, has been described in hereditary syphilis ; and Pritchard and Cheatle suggest that some such process, with destruction of the purely auditory portion of the nerve and its terminations, would account for the symptoms.

Another variety, first described by Kipp, is associated with vertigo. The onset is sometimes sudden, or the process may be subacute or chronic in its course. The symptoms are nerve deafness associated with giddiness and disturbances of equilibrium. In a case of acquired syphilis described by Moos, the connective tissue between the osseous and membranous labyrinths was infiltrated with round cells, as also the arches and cells of Corti. Pritchard and Cheatle, who narrate three cases in hereditary syphilis, think that some such process will explain them.

Special Senses (Eye).

Iritis in syphilitic infants is one of the most uncommon manifestations of the disease. The writer has never seen a case, although he has examined the eyes of hundreds of syphilitic infants as a matter of routine. He has seen occasionally slight muddiness of the iris, with or without episcleral injection, but never a case that showed irregular dilatation of the pupils when atropine was used. The use of atropine drops, as also homatropine, in infants is often unsuccessful. The pupils may not dilate for hours, or perhaps imperfectly or not at all. Flushing of the face and neck and upper part of the chest, with dryness of the mouth, is seen, showing well-marked physiological action of the drug, but the pupils fail to enlarge. The writer called attention to this peculiarity some years ago in the *Lancet*, and the fact is mentioned again here lest the failure to dilate be interpreted as fixation by adhesions. Henoch has never seen a case, and his experience and the author's is borne out by other workers in the field of children's diseases. Jonathan Hutchinson, Senior, narrates twenty-three cases, mostly under his own observation, and speaks of five under a friend, but admits its extreme

rarity. Its occasional occurrence was recognised some sixty years ago by Evanson and Maunsell of Dublin, who saw well-marked syphilitic iritis in a child about a year old. Dr. William Mackenzie, in his treatise on 'Diseases of the Eye' (1854), was evidently well acquainted with the affection. He says: 'Iritis is not infrequently the consequence of congenital syphilis, and is sometimes the first symptom which is observed.' Further on he remarks: 'The usual copper-coloured eruption appears over the body.' Of Hutchinson's cases the youngest was six weeks, the oldest sixteen months. The majority were females. About half the cases were bilateral, and in fifteen the lymph was copious. In three the iris was merely tumid and discoloured. In one the cornea was hazy, and in another it ulcerated. In twelve cases one pupil was permanently occluded by false membrane. Iritis often occurs in late hereditary syphilis as a complication of interstitial keratitis, but is rarely met with alone.

Interstitial Keratitis usually occurs between the ages of six and fifteen, but is sometimes seen at two or three years. One eye is attacked, and the other follows suit shortly afterwards—a few weeks, perhaps, rarely a year or two. Clouds of opacity of varying density appear in the cornea, and gradually coalesce until the whole is like ground glass. The episcleral vessels are injected, and a vascular fringe may invade the cornea, forming the so-called 'salmon patch.' Although the sight may be lost for the time being, the tendency is to recovery and complete clearing of the cornea. Fournier denies that all cases are syphilitic, but thinks that some are due to malnutrition. Iritis is not an uncommon complication.

Disseminated Choroiditis.—It is difficult to say when this disease commences. Any slight failure of sight that may be present is not noticed by children, and if noticed no complaint is made. It is more often than not

FIG. 28.

Disseminated choroiditis, atrophic stage.

(*To face p.* 85.)

found accidentally on making an ophthalmoscopical examination for diagnostic purposes, when in search of evidence that might yield a clue as to the nature of an obscure malady. Such cases are rarely seen in the initial or exudation stage, but come under notice when atrophic changes are more or less marked. It occurs in two main forms. One, the most usual, consists of round or oval or irregularly-shaped areas of choroidal atrophy of a fawn or white colour. These atrophic areas are often surrounded by rings of pigment, and spots and patches of pigment are seen on them and in their midst. The atrophy may be widely distributed, and confined to the retinal pigment epithelium, and the capillary layer of the choroid. This exposes the underlying large choroidal vessels. The condition may or may not be associated with pigmental deposits. Before diagnosing superficial choroidal atrophy from the fact that the underlying choroidal vessels are exposed, the age and the complexion of the child will have to be taken into account, or what is not at all an uncommon physiological occurrence may be regarded as pathological. The superficial and the deep changes may be associated. The usual situation is in the periphery, but the disease may extend all over the fundus.

In the second form will be seen a large number of small patches, with numerous black pigment dots or striated or lacelike accumulations in the retina. This condition simulates retinitis pigmentosa, and may be associated with night-blindness. Further atrophic changes may take place in the shape of a wasted retina, narrowed retinal blood-vessels, and an atrophied optic disc of waxy colour.

Disseminated choroiditis does not necessarily mean congenital syphilis, but, taken in conjunction with other signs of a doubtful nature, its presence is of diagnostic value. If found alone, it must not be looked upon as sufficient to warrant such a diagnosis.

Vascular Changes in the Retinal Vessels.—These occur with or without choroido-retinitis. Some or all of the retinal vessels may show ophthalmoscopic changes due to a thickening of the intima by hyaline transparent substance. The condition generally shows itself by the presence of a grayish-white line on either side of the affected vessel, which towards the peripheral parts of the fundus may be altogether obliterated and replaced by a grayish streak. The condition is pathognomonic of syphilis.

Optic Nerve.—It is questionable whether optic neuritis ever occurs primarily, and it is uncertain whether the following case should be looked upon as of primary origin, or secondary to intracranial mischief of obscure localization.

A girl of eleven years who had been suffering from headaches for about a year was taken for advice to an eye surgeon, who diagnosed hypermetropic astigmatism, and prescribed glasses, but thought the discs healthy. She previously had been an inmate of the medical wards at the Evelina Hospital under suspicion of meningitis, for intense headache, vomiting, and obstinate constipation. She was so thin that she had to be placed on a water-bed. Three weeks after she had been sent to the oculist she came under the care of the writer, who found that she had decided double optic neuritis, but nothing, apart from her history and the fact that she suffered from headache, to suggest intracranial disease, and no evidence of such on physical examination. She had a buffer-like forehead, and her parietal eminences were prominent. Her teeth were ridged, but not specific. The family history was exceedingly suggestive, for her mother had experienced one miscarriage and six still-births. Seven children were born alive, but all had suffered from rashes on the buttocks, which extended below the knees. She was ordered a perchloride of mercury and iodide of potassium mixture, sub-

sequently changed to mercury and chalk powders. Under this treatment the optic neuritis cleared, and the writer, some four months after the commencement of treatment, sent her to Mr. Brailey, who found her field and vision perfect and the neuritis subsiding. He agreed with the writer and a colleague that the child was syphilitic. She quite recovered.

Although it is quite exceptional to see optic neuritis, instances of optic atrophy are more common. Atrophy is possibly in some instances secondary to neuritis such as has been described. It has been found in association with ophthalmoplegia externa. It is sometimes seen accompanying changes in the fundus oculi which indicate a past neuro-retinitis with or without attachment of the deep layers of the choroid.

Infantilism

is the name that Fournier has given to the condition in which there is retarded development in cases of congenital syphilis. In pronounced cases young men and women have the characteristics of boys and girls. In the case of the men the testicles are small and undeveloped, and there is an absence of pubic hair. The individual is dwarfed in mind and body. The women show a similar backwardness. The pubic and axillary hairs are wanting, menstruation is in abeyance, and the uterus and its appendages are small. It is not every case that presents such marked changes as these, but slight mental and physical dwarfing are not uncommon.

CLINICAL HISTORY AND BRIEF SUMMARY.

Clinical History.

The child at birth is, in the great majority of cases, apparently healthy. The usual time for the onset of symptoms is the third week. Of 1,000 cases observed by Miller of Moscow, the first symptoms occurred at the following periods :

First week	...	85 cases.
Second ,,	...	138 ,,
Third ,,	...	240 ,,
Fourth ,,	...	177 ,,
Fifth ,,	...	86 ,,
Sixth ,,	...	54 ,,
Seventh ,,	...	50 ,,
Eighth ,,	...	30 ,,
Subsequently	...	140 ,,

Thus, 64 per cent. of the cases occurred in the first month and 22 per cent. in the second.

In hospital out-patient practice, mothers do not seek advice as early as the above figures might suggest. Thus, of the author's own cases, comparatively few were seen during the first month of life. The bulk of them came under observation during the second and third months. By the fourth month a rapid fall in numbers took place, and the cases were less than a quarter of what they were during the combined months. Subsequently there was a steady fall in attendances until the twelfth month, when about a dozen cases were seen out of a total of over 600.

After the twelfth month about two cases were seen per month during the second year, and in each succeeding year about two or three cases until the age of twelve years. If Parrot's nodes be taken as evidence of syphilis, the figures during the second and third years would be a trifle higher, but their inclusion would, after all, make but little difference. Syphilis after the second year is a comparatively uncommon disease, and it is not until the advent of puberty that the number of cases is augmented to some extent. If an infant does not develop symptoms during the first three months of life, it is almost certainly free from the disease.

The earliest manifestations are irritability and wakefulness at night. This is followed by 'snuffles.' A rash, accompanied by slight fever, frequently follows, and now and then precedes the 'snuffles.' In some instances a hoarse cry accompanies the 'snuffles,' and the mouth and throat present mucous patches. If the child be breast-fed it will probably remain fat and well nourished during the course of the complaint, especially if the disease is recognised and treated early; but bottle-fed babies, and especially those out to nurse, are not so well favoured. The fact of a breast-fed child wasting without gastro-intestinal disturbance should excite suspicion, and a thorough examination be made. A 'beautiful baby born' is the oft-repeated tale in the out-patient room, but the child wastes, and when presented for examination is perhaps found to be a feebly-whining, undersized mite with a *café-au-lait* complexion, a wrinkled brow, a monkey-like face, and the skin hanging in folds upon an attenuated frame.

The manifestations can be divided into two periods—the earlier during the first two years of life, the later about puberty. These two periods are bridged by sporadic outbreaks of the disorder, and the later period is prolonged

up to the age of twenty-five years, and in rare instances for some years longer. The gap between these two periods is usually filled by the occasional appearance of anal condylomata and mucous warts, of cutaneous gummata, and perhaps nodes on the long bones, features common to the initial stages of the disease. These are joined by cases showing an earlier onset than usual of the affections peculiar to the second period, such as interstitial keratitis, destructive ulceration of the throat, and synovitis. Hereditary syphilis attacks its victims in a variety of ways. Of all the various manifestations of the disorder, chronic 'snuffles' is the most frequent and trustworthy ; indeed, it may be the only indication. It is commonly associated with craniotabes. During repose the 'snuffles' may not be evident ; but disturb the child in any way, and it will at once become obvious. There may be no discharge from the nostrils, but a soft bougie passed into the naso-pharynx through the nose will, on its withdrawal, be found covered with muco-pus, or the latter may be seen, on inspecting the throat, to be trickling down the posterior or pharyngeal wall. Craniotabes, with or without 'snuffles,' is certainly a valuable sign, and should excite strong suspicions of the disorder. It should be looked for as a matter of routine.

Cutaneous lesions are common accompaniments of chronic 'snuffles.' These syphilodermata are polymorphous, and this polymorphism is one of their most characteristic features. After a time their colour darkens, and they assume a copper-colour or raw-ham appearance.

Cutaneous manifestations after the first twelve months of life are exceptional, but cutaneous gummata are occasionally seen within the next three or four years, in the shape of the furuncular syphilide (see p. 28). So, too, the subcutaneous gummata which secondarily implicate the skin, produce typical punched-out ulcers, and mostly occur

between the third and the twentieth year. Copper-coloured macules and flat-topped papules of various sizes, often superficially excoriated, are sometimes observed on the buttocks in syphilitic children for the first three or four years of life.

Anal condylomata and mucous warts appear in the neighbourhood of the anus or the vulva. They usually occur after the first six months of life, and are found occasionally during the first few years. They may be the only manifestations of the complaint, and in the writer's experience are not infrequently associated with the macules and papules previously mentioned. Sometimes alopecia is the only sign, and may be confined to the scalp or affect the eyebrows or eyelashes, either singly or together. Glandular swellings without obvious cause must be viewed with suspicion. Splenic enlargements within the first three months of life are almost certainly syphilitic ; but within the next three months, although highly suspicious, must not be accepted as a positive proof. Enlargements of the liver are often found in association with splenic enlargements, and in a limited number of cases the liver is increased in size alone. Splenic and hepatic enlargements are mostly associated with other obvious manifestations of congenital syphilis which at once banish any doubt as to the cause, but occasionally these enlargements are the only manifestations—'snuffles,' perhaps, excluded—of the complaint.

Syphilitic affections of the testicles require more than a passing word, and the alterations to which these organs are subject should be studied, for they are not unimportant in unravelling a difficult case, and it must be clearly understood that it is not in every instance that it is possible to diagnose the disorder with certainty. The welding together of slight indications—indications which can only be discovered by a systematic and thorough examination of all

parts of a child's anatomy—may form strong links in the chain of evidence. Bone lesions occur usually in the shape of epiphysial enlargements in infants, with or without slight periosteal extensions to the shafts of the neighbouring bones. These lesions are apt to produce weakness of the affected member, or immobility, to which the term 'pseudo-paralysis' has been applied. Periosteal thickenings of the bones also occur, without obvious implication of the epiphysis, as also in parts away from its neighbourhood. Cranial bosses may complicate the condition, but these are more often found after the first year of life than before it. Although syphilitic epiphysitis, often multiple in its distribution, is usually found in association with other lesions, it may be the sole manifestation of the complaint, and an apparently paralyzed limb, or limbs, the only sign.

Undue reliance must not be placed upon the family history. The fact that the mother enjoys good health does not negative the diagnosis of syphilis, for, as has been shown, she may escape the disease and yet produce a syphilitic infant. Miscarriages must not be looked upon as evidence. A series of still-births, followed by the birth of a living child which possibly died in the early weeks or months of its life, should, on the other hand, excite strong suspicions. Preceding abortions or still-births are not necessary parts of the programme of the disease, and a syphilitic child may be the product of the first conception. In private practice it is not always convenient, or, indeed, desirable, to make pointed inquiries, and great store must not be placed upon evidence gleaned in this way. The disease itself should be studied in all its bearings, and a correct appreciation of its clinical details, which can alone be gained by examining cases, will be found essential. It often happens that mere inquiry is met by strong denials calculated to throw the novice off his guard, and this sometimes in the face of glaring

evidence in the person of the affected child. In the elucidation of a doubtful case, examination of other children in the same family may prove of great assistance in arriving at a conclusion, for in them the disease may be well marked.

The later manifestations usually appear about puberty, but in rare instances all the lesions common to that period occur at a much earlier date, or, on the contrary, are postponed to a later age. The congenital syphilitic may now and then develop epilepsy or become idiotic. The ought-to-be adolescent may be brought on account of its general immaturity and child-like characteristics. The most common complaint of all is interstitial keratitis. This may be associated with nerve deafness, and when the two are combined with syphilitic teeth the condition is often spoken of as 'Hutchinson's triad.' Sometimes the throat, the palate, the nose, or the larynx may undergo rapid destruction. Perhaps advice is sought for a painless synovitis, often of both knee-joints, or for an osteoperiostitis of the long bones, or for chronic glandular enlargements. Sometimes gummatous ulcerations of the skin are the source of trouble, possibly associated with typical teeth and evidences of former disseminated choroiditis.

A girl of ten under the writer's care had typical teeth, disseminated choroiditis (old) on both sides, and post-nasal growths. The glands in the neck were enlarged, separate and hard. They were just the same after two months' treatment. Now and then, say in a child from eight to twelve years old, an enlarged liver, hob-nailed and bossy, may suggest cirrhosis or an invasion by some malignant neoplasm, and turn out to be of syphilitic origin, inasmuch as it completely recovers under antisyphilitic treatment. In such a case the spleen may be enlarged also. If in some of these cases the skull be examined, evidence will possibly be

forthcoming of antecedent cranial bosses confined to the frontal eminences, or an illustration of the hot-cross bun by the added implication of the parietals. Among other organs which may be involved, and which have been already described in the text, may be mentioned the kidneys, testicles, spleen, lungs, brain, meninges, and spinal cord.

In forming an opinion as to the nature of these late manifestations, some will be obvious enough, but in others the causation may not be self-evident, and the appearance of the patient anything but suggestive. There may be no maternal history of consequence, and the child or adolescent, from all that can be gathered, has passed through an uneventful infant life. Syphilitic children are not infrequently good-looking and well developed. But even in these doubtful cases it may be possible to find some slight tell-tale evidence if carefully sought for. The periosteal node, perhaps changes in the fundus oculi, relics of bygone iris trouble, a suspicious scar of well-nigh forgotten skin ulceration, may each in turn provide the missing link. It is in cases that simulate tuberculous disorders that a thorough examination of all parts is especially needful before arriving at a conclusion. Radiating scars round the mouth and a flattened and expanded root to the nose at once suggest the inherited vice, and point to the nature of the lesion. In comparison with infantile syphilis, the later manifestations are decidedly uncommon.

The short recital of a few cases as seen in infancy will help to show the composite nature of the disorder, and illustrate the descriptions contained in the foregoing pages.

Case 1.—A female child, aged eleven weeks. The first child. She presented the following characteristics: Well-marked 'snuffles' of six weeks' duration. A three weeks old eruption, which first appeared on the eyebrows. A dull red sheet eruption on the buttocks, thighs, and hypo-

gastrium in front, and behind about the sacrum. Outlying papules surrounded this from a pin-puncture to a pin's head in size, together with some larger areas. Some isolated slightly scaly lesions on the abdomen and back. A sheet eruption in the folds of the neck, scaly, with outlying scaly papules. Eyebrows desquamating. Scaly patches on the scalp with outlying scaly papules. In the axillæ a sheet eruption. Craniotabes of the parietals and left side of the occipital bone. She attended the hospital for some six weeks with marked improvement. The treatment was a grain of gray powder thrice daily.

Case 2.—A female aged twelve weeks, the fifth child, was brought with marked 'snuffles' of six weeks' duration. The twins before this had 'snuffles' and thrush which 'passed through them.' A copper-coloured eruption was found on the buttocks and lower extremities, except the soles, consisting of macules and papules varying from a hemp-seed to a lemon pip in size; in some places scurfy and leaving a dirty stain on pressure. These lesions had run together here and there and formed a peculiar coarse network of eruption. The upper extremities were affected in the same way, chiefly on the flexor surface; the palms were desquamating, and the backs of the hands to a less extent. The lips were cracked, and an eruption similar to that on the lower extremities stretched from the lower lip all over the chin, and down the neck, which also showed flat-topped papules. One grain of gray powder was ordered thrice daily. Six months after the child developed broncho-pneumonia, and died in a week.

Case 3.—A female aged fourteen days. The first child. Crusts about the nostrils, but no definite 'snuffles.' Rash appeared four days after birth. *Scalp:* Very numerous cutaneous gummata in size from a large pin's head to that of a pea. Many pink on the surface, others show purulent

tops, and others, again, crusts which are freely scattered about. *Left arm:* Many gummata in size from a small to a large pea; both surfaces involved. *Right arm:* A small gumma. *Trunk and legs:* A few gummata, and one on the first toe of the right foot. The legs and buttocks also show some violet-coloured stains with central depressions (discharged gummata) and a few isolated papules. The trunk desquamating. Aggregations here and there of small bright pink papules with vesicular tops, the contents of which are opaque in some instances. *Face and neck:* The same. Some desquamation of the feet. Nails of the hands normal, of the feet small and not so well developed. The liver a finger's breadth below the costal margin. Ordered *hydrarg. c. cretâ*, *gr.* 1, *t.d.s.* Two fresh cutaneous gummata appeared three weeks later. She attended two and a half months.

Case 4.—A female, aged four months, was brought to the hospital on December 2, with the statement that there had been a rash on the buttocks for three weeks followed by 'red lumps' a week later. No specific history. 'Snuffles' only recently. She had a sheet eruption on the buttocks, the vulva, the lower part of the abdomen, and the inner sides of the thighs, with a raised edge in some parts, but not in others. Round the rash were numerous cutaneous gummata, some of which were vesicular on the top, others pus capped. Other parts were free from rash. A grain of hydrargyrum cum cretâ ordered thrice daily. December 23: Cutaneous gummata gone, leaving numerous pigmented and slightly depressed hard cicatrices. Unable then to move the left leg, which was painful. The femur was found thickened in its entire extent, and the tibia also about the middle. The overlying skin was hot and shiny. January 6: Nodes smaller, no tenderness. January 20: Nodes have disappeared. October 18: Slightly rickety,

but runs about and has done so since twelve months of age.

Case 5.—A girl aged eight months. The sixth child, four others died shortly after birth. Has suffered from 'snuffles' since birth. Now has three cutaneous gummata on the scalp, one on the front of the left thigh, and one on the back of the right. Of the parietal bones there was marked craniotabes, which disappeared under mercurial treatment in less than a month. She was then obviously rickety, and continued so for some time, until she disappeared from observation. The gummata were well in a fortnight.

Case 6.—A male aged seven months was brought to the hospital on March 20. The mother said she had four children born dead one after the other. The five living all had a rash which passed to the feet. The child 'snuffles' loudly. The hair is scanty in the front of the head as far as the level of the tops of the ears. It is also worn away over the occiput. Eyebrows nearly all gone. Bridge of nose depressed. Fissured lips. General adenitis, the glands varying in size from a pea to a small bean. Spleen two fingers' breadth in front of the costal margin, the liver the same distance below it. In the neighbourhood of the anus some red papules the circumference of a lemon-pip. He had an oval node on the front of the left tibia. The humeri above the elbows were thickened, as also the ulna and radius below them. The femora above the knee-joints seemed to be thickened. He screamed when the nodes were touched. The skull above the eyes presented two symmetrical bosses. He remained under observation for three months, and was greatly benefited by gray powder (a grain thrice a day).

Case 7.—A male aged two and a half months, with 'snuffles.' His mother had three other children, all of whom had 'thrush,' which passed all over them, the feet included. Craniotabes of the left parietal bone. Loss of

hair for fourteen days, now very scanty and poor in front to the level of the tops of the ears; elsewhere thick and red. Sebaceous crusts scattered about the scalp.

Case 8.—A male aged two months. 'Snuffles' on and off since birth. His sister immediately preceding him was a typical syphilitic. Extensive craniotabes of all the skull bones. In the groins and about the scrotum some redness, in places as if varnished, elsewhere moist and showing red excoriations. Treated with gray powder in usual dose. In spite of treatment, the progress made was not satisfactory, and he died in convulsions four and a half months later.

Case 9.—A male aged three weeks was brought to the hospital on October 3. His mother gave a history of six consecutive deaths of children between two and four months old, followed by the birth of the patient. The spleen was two fingers' breadth in front of the costal margin, and the liver three fingers below it in the nipple line. He had a plentiful eruption of irregular, dirty brown scaly spots. On the legs, especially about the knees, were seen dirty pink stains from a pea to a threepenny-piece in size, and slight furfuraceous desquamation. On the toes were yellow scales. On the soles and the heels were slightly raised patches, the size of a split pea, of thickened cuticle which could be peeled off. The backs of the feet were scaly. Thin scales were found on the arms, and the hands were freely desquamating. The face and ears were scaly, thicker and yellowish at the right angle of the mouth, the right side of the nose, and on the left cheek. On October 9, he had convulsions and died. He took his food well to the last.

Case 10.—A male aged three months. The first child. No miscarriages. Had 'snuffled' for a month. Well nourished. Spleen one finger in front of, and liver two fingers below the costal margin. A dirty-red erythematous sheet eruption, in places as if varnished, with a few outlying

macules, on the buttocks, hypogastrium, thighs and calves. Some isolated copper-coloured papules below the umbilicus. Scurfiness about the forehead, and crusts on the eyebrows. Scalp scaly. Some macules about the arms and forearms, a few papules on the neck, and some small spots in the axillæ.

Case 11.—A female aged ten weeks. The mother gave a history of four still-births, but no miscarriages. The children living suffered from 'snuffles' and sore buttocks. The patient had 'snuffles' so badly that it was found necessary to feed her with a spoon. The liver was one finger's breadth below the costal margin in the nipple line. The wrists were enlarged, and the thickening extended up the shafts of the bones. The epiphysis of the left was separated, there was wrist-drop on both sides, and crepitus was obtained on the left. She could move the fingers. Three grains of gray powder were daily ordered. A week later some redness of the skin and induration about the anus were noticed. The following week the crepitus at the wrist had disappeared and reunion had taken place. A fortnight later the wrist-ends were still large, and could not be distinguished from rickets. She could move her hands freely. At the end of six weeks, dating from the first attendance, some copper-coloured macules and papules, varying in size from a pin's head to a hemp seed, appeared on the buttocks and genitals. Four and a half months from the commencement of treatment cutaneous gummata were found on the inner side of the left thigh, which disappeared in a fortnight.

Case 12.—A male aged five months, who was brought for seborrhœic dermatitis of the face and scalp, was found to have 'snuffles.' His mother said he 'snuffled' very much 'when a baby.' His brother also 'snuffled.' The hair was scanty. A month later a 'lump' was noticed in the buttock. When he was examined the following week, the writer

found a considerable area of cutaneous induration of the right buttock, which was circumscribed. The cuticle was reddened. He was given a grain of gray powder thrice daily. The next week there was hardly any induration left. His hair began to grow under the treatment, and the seborrhœa disappeared. He was a breast-fed child, and well nourished when he first came under observation, and, apart from his cutaneous lesions, apparently had but little the matter with him.

Case 13.—A male aged two months, with 'snuffles.' Mother stated she had two still-births, and nearly all the children had 'snuffled.' Wasting. Spleen one and a half fingers in front of the costal margin. *Testicles:* On the left side a hydrocele the size of a walnut, so that the organ cannot be felt. Gray powder was given in usual dose. Three weeks later the hydrocele had disappeared. Two weeks after this he developed a maculo-papular eruption, which was general. After three months' treatment (dating from the first attendance), the right testicle remained normal, but the left was decidedly larger and much harder than the other. The epididymis was larger, but not harder. All the elements of the cord were larger, but no induration was found. The spleen had decreased in size.

Case 14.—A male aged two months, 'snuffling.' Two children; no miscarriages. First attended January 3, with a large hydrocele. Three grains of gray powder were administered daily. March 3: No alteration in the hydrocele, so it was tapped. The cord was found to be the size of the little finger, and indurated. The globe and epididymis in combination were the size of the kernel of a medium-sized walnut. The former was hard, and the latter indurated in the upper half. March 7: Sac had partially refilled. June 27: Hydrocele almost gone. July 11: Mercury stopped. July 25: Started diarrhœa and vomiting.

Gradually went down-hill, and died on August 11. No post-mortem could be obtained.

Case 15.—A male aged three months. 'Snuffles' since one month after birth. No miscarriages. A twin child; the other died when a few hours old. No rash. All the children had 'snuffles.' Pallid baby. Spleen one finger in front of the costal margin. Craniotabes of both parietal bones. No enlarged glands. Well nourished.

Case 16.—A male aged six weeks. First child. 'Snuffles' for a week, and brought for loss of power in the arms for the same period. Both arms appear to be paralyzed. On the left side there is doubtful enlargement of the wrist, but the elbow is thickened above the joint for a short distance. The elbow on the right side is much more thickened, and the thickening extends higher up the shaft of the humerus. The legs are weak, the femora being thickened above the knee-joints. *Testicles:* Hydroceles on both sides, which are fairly tense, and twice the natural size; the right the larger of the two. The epididymes are possibly enlarged somewhat, but they are certainly hard. The cords also seem enlarged. A sheet eruption on the buttocks and scrotum. Some outlying flat-topped papules the circumference of a split pea. Backs of the calves invaded. Hands and feet thickly desquamating. The axillæ show a scaly eruption. A sheet syphilide all round the mouth reaching to the neck, and shallow ulcers on the lips. The hydroceles cleared under the use of mercury, but he died about a month after the first attendance. *Post-mortem:* This was made under great difficulties, the grandmother insisting on being in the room. The testicles were not larger than natural, but all parts were extensively sclerosed (see Fig. 23).

Case 17.—A female aged four months. Decided 'snuffles.' Bridge of nose sunken. Spleen two fingers'

breadth in front of the costal margin, and the liver the same distance below it in the nipple line. Wasting and a rash for two months. The other twin had a rash on the buttocks. Violet-red papules round the anus as if varnished. Patches the size of a threepenny piece, also varnished-looking, and one or two of them are superficially excoriated. The glands vary in size from lemon-pips to peas everywhere except in the popliteal space and at the elbows.

Case 18.—An anæmic female child, unweaned, aged thirteen months. Rickety, with enlarged liver and spleen, the outlines of which are shown in the frontispiece. Accessible lymphatic glands enlarged and hard. Cranial bosses. The blood count was as follows:

Erythrocytes	...	...	4,700,000 per c.mm.
Hæmoglobin	...	...	42 per cent.
Leucocytes ...	...	...	30,000 per c.mm.

Treated with cod-liver-oil, citrate of steel wine, and liquor arsenicalis. Great diminution in the size of the spleen during an attendance at the Evelina Hospital lasting six months. Four months later the liver and spleen were natural, but she was still rickety (see frontispiece).

PROGNOSIS.

The vitality of syphilitic infants is low, and a large proportion of those born alive succumb to the malady. Of 2,038 syphilitic children in the Foundling Hospital at Moscow, over 70 per cent. died. In one Vienna hospital, of sixty-one children born syphilitic fifty-nine died. Of forty-seven living at birth only four survived more than three months. According to J. N. Hyde, of 1,121 syphilitic births, 916 died within the first year. To gauge the mortality in

hospital out-patient practice is very difficult. Many patients make but one attendance, and are seen no more. Others attend for a short time and disappear. A large number no doubt succumb, and a doctor being called in at the last moment renders the application for a death certificate at the hospital unnecessary. Many certainly die in spite of treatment. Of these some are carried off by convulsions, others by broncho-pneumonia, and others, again, by the gastro-intestinal troubles to which these infants are a prey. The mortality is exceedingly high, but probably does not approach the foreign statistics given above. The outlook in private practice is much better than amongst the poor, such as attend the Evelina Hospital for Sick Children in London. The earlier the symptoms, the more likely is the infant to die, and if the child is born with them, or they appear within a few days of birth, the outlook is not promising. Those with extensive enlargements of the spleen usually die. The feeding in a great measure controls the result. Bottle-fed babies are heavily handicapped. Much will depend upon the nursing and care bestowed upon the child, the hygienic surroundings, and the reaction to mercurial treatment. Syphilitic infants, if they survive, are especially prone to become rickety. The later manifestations are not dangerous to life. They are amenable to treatment if taken sufficiently early. Some are cured with more or less loss of tissue substance in such situations as the larynx, the throat and nose. Interstitial keratitis usually recovers completely, together with the iritis which sometimes accompanies or replaces it. Choroido-retinitis is attended by much scarring, but optic neuritis, if taken early, may be cured, with perfect vision and an unrestricted field. Nerve deafness is amenable to treatment if taken early, at the commencement of the affection. Treatment greatly improves those cases of retarded development spoken of by Fournier as infantilism.

TREATMENT.

In addition to suitable hygienic surroundings, good breast milk is of primary importance. To insure this, the general health of the mother demands attention, and should she be suffering from syphilis, suitable treatment must be adopted. In the event of the mother being unable to nurse, a woman who has borne syphilitic children may be allowed to undertake the duty, but no woman free from the disorder, or who has not acquired protection from bearing syphilitic offspring, must be engaged. If a healthy woman be allowed to suckle a syphilitic child, she will contract the disease from her nursling. If the mother cannot nurse, and a wet-nurse is out of the question, a suitable milk mixture must be substituted.

The sovereign remedy for congenital syphilis is mercury. The best and mildest preparation is mercury and chalk, the hydrargyrum cum cretâ of the British Pharmacopœia, of which 1 grain may be given three times daily. To this 3 grains of white sugar may be added with advantage. The powder is placed at the back of the infant's tongue, and is readily swallowed. The dose may be increased to 2 grains of the mercurial powder if necessary, but the better practice is to rely on the smaller dose. Intolerance of the drug is not shown in infants by salivation, because the function is not properly established, but by diarrhœa. This may be combated by adding to each powder a grain or two of carbonate of potassium or of bismuth, or 3 or 4 grains of prepared chalk. If this prove unsuccessful, $\frac{1}{6}$ to $\frac{1}{4}$ grain of Dover's powder may be substituted. During a mercurial course diarrhœa may be induced, and if this happen the medicine should be stopped for a day or two, or be modified by any of the additions men-

tioned. Some physicians prefer $\frac{1}{10}$ grain of calomel given two or three times a day. Should it disagree, it may be mixed with Dover's powder in the proportions already given. If treatment by the mouth is impracticable from the cause mentioned, inunctions of mercury may be substituted. Some practitioners, indeed, prefer this mode of medication to the other. One method is to rub 20 grains of blue ointment into the palms and soles, or other parts of the body, night and morning. Another is to take a piece of blue ointment, and mix it with an equal part of cold cream or lanoline or vaseline. This should be spread on a handkerchief sufficiently large to cover the front of the abdomen of the infant, previously well washed, and allowed to remain in position for twenty-four hours. Over all a broad flannel binder should be tightly fixed. One day it should be placed on the abdomen, and the next on the loins, while any remaining ointment is carefully washed away on each occasion. If the ointment produce irritation, it should be removed and the part dressed with boric vaseline. When the irritation has subsided, the strength of the ointment must be reduced to an extent which will prevent further cutaneous irritation. Another method which some favour is the use of mercurial baths. Five or 10 grains of corrosive sublimate should be added to $3\frac{1}{2}$ gallons of water, or $\frac{1}{2}$ or 1 pint of the liquor hydrargyri perchloridi of the British Pharmacopœia. A bath should be given once a day or night and morning. Intramuscular injections into the buttocks of corrosive sublimate in doses of $\frac{1}{100}$ grain (10 minims of liq. hydrarg. perchlor., B.P.) or less may be given, but troublesome abscesses, or even sloughs, may result if perfect cleanliness be not observed, and the operation is not unattended by pain. Localized indurations are a common sequence of this method of treatment.

Succinimide of mercury, which is freely soluble in water,

in intramuscular doses of $\frac{1}{6}$ to $\frac{1}{4}$ grain is a better preparation, and there is much less tendency to local irritation.

It should be injected daily for the first four days, then every other day for a week or two, and subsequently every third day. This is usually sufficient to keep the patient under the influence of the drug. The quantity to be administered, and the frequency of the injections, must be gathered from the results obtained in each case. If diarrhœa supervenes the drug must be stopped temporarily. Intramuscular medication is useful when a rapid action is desired. Further, it insures the reception by the patient of the drug prescribed. If the former be the object in view, treatment by the mouth should be substituted when that has been accomplished.

Apart from these advantages there are no benefits to be expected from this method, and its disadvantages have already been mentioned.

Excoriations of the buttocks are best treated by scrupulous cleanliness, and by dusting the parts with equal parts of calomel, starch, and oxide of zinc. Mucous tubercles and fissures about the mouth and anus should be dusted with calomel. The mucous wart about the anus and genitals rapidly disappears under this treatment. 'Snuffles' is best treated by gently removing the crusts from the nostrils by warm water, and dressing the sores with ammoniated mercury ointment (1 in 3). Some of the ointment should be passed into the nostrils on a camel's hair brush. Should the nasal obstruction be beyond reach and interfere with nursing, the infant must be fed with a spoon. If it is breast-fed, the milk must be withdrawn for the purpose. Sores about the natal fissure, fingers, and toes, are best treated with the white precipitate ointment (1 in 3), as also the lesions left from cutaneous gummata. Should gummatous ulcers of the skin be slow in healing, a good plan is

to stimulate them with red oxide of mercury ointment. For the epiphysial lesions and pseudo-paralysis no special treatment is required except to protect the parts from injury. Both these and the inflammations of the periosteum are readily amenable to mercurial treatment, and the administration of iodide of potassium at this stage is unnecessary. Craniotabes, as a rule, readily yields to mercurials, but the same does not apply to cranial osteophytes. The writer has seen, exceptionally, considerable alterations in them from the use of mercury, but in the majority of cases it has apparently produced no result whatever.

Syphilitic consolidation of the lung and those cases of lobar pneumonia apparently of a simple nature, occurring in syphilitic children, which do not resolve in a reasonable time, but, on the contrary, bid fair to become chronic, should be treated locally by Scott's dressing and by iodide of potassium internally, either alone or in combination with mercury.

Syphilitic enlargements of the liver and spleen found during the first six months of life usually respond to the mercurial course employed for the constitutional disorder.

It is not possible to decide whether a suspicious splenic enlargement coming under observation after the first six months and during the active rachitic period of life (*vide* chart, p. 17) is syphilitic or not in the absence of obvious constitutional symptoms or strong presumptive evidence in favour of a specific taint, aids to diagnosis which are frequently wanting at these times.

In the event of any doubt lingering in the mind it is best to administer mercury.

In either case, however, it is most important carefully to regulate the diet, which is often at fault, and to substitute a healthy environment and mode of life in place of one spent in sunless quarters in a vitiated atmosphere. Plenty

of fresh air at home, a life spent out of doors as much as possible, and suitable food are essential. In addition to hygienic treatment, such drugs as cod-liver oil and citrate of steel wine are valuable, to which should be added 2 or 3 drops of Fowler's solution of arsenic taken thrice daily half an hour after a meal.

Enlargements of the liver and spleen arising as one of the later manifestations of the disorder require iodide of potassium and mercury for their treatment, together with topical applications of Scott's dressing or other mercurial preparation.

A variety of opinions is expressed as to the length of time mercurials should be administered. Jonathan Hutchinson, Senior, does not recommend its continuance after the cessation of symptoms, and says that it is uncertain whether its prolonged use has much effect in preventing the later manifestations. He also thinks that the permanent teeth are likely to suffer if it is persisted in. Others are of opinion that it should be continued for several months after the disappearance of symptoms. Rotch would also give it at intervals of three or four months during the first three or four years of life as a matter of routine, as also during the period of the second dentition, and again at puberty. The writer treats his cases with mercurials for at least a year, and has seen nothing but good accrue from their continuation for two years. In addition to mercurial treatment, tonics in the shape of cod-liver oil and steel wine, or syrup of iodide of iron, are very serviceable. Later, if the child be found ailing at any time, a short mercurial course is desirable, and will be found beneficial. Mercury is an energetic producer of red blood corpuscles in these cases. For the later manifestations iodide of potassium in from 3 to 5 grain doses, which may be increased if necessary, should be given, which is better mixed with a solution

of perchloride of mercury. The following is a useful prescription which can be given with safety to a child of two years:

℞. Liquor hydargyri perchloridi ... ℥ i.
Potassii iodidi ... ... grs. v.
Aquæ ... ... ℥ p.
T.d.s.

Should the mercury cause indigestion, it should be omitted from the mixture, and mercurial inunctions substituted. For the ulcerations about the throat and nose, iodoform insufflations are useful. If the ulceration be rapidly destructive, cauterization with acid nitrate of mercury will be found beneficial, followed by iodoform insufflations. Ulceration of the larynx is benefited by topical applications of sulphate of copper (gr. 15 ad ℥ i.) and by perchloride of mercury 1 in 1,000 in the form of a spray. Should œdema of the larynx complicate the local lesion, the mucous membrane should be scarified, and failing quick relief by this method, intubation must not be delayed.

Stenosis of the larynx requires the permanent wearing of an intubation tube.

Some cases of ulceration of the mucous membranes, as also of bone disease, are rebellious to the ordinary methods of treatment. In such it is necessary freely to administer iodide of potassium, which may be given in doses up to 20 or 30 grains or more thrice a day.

The iodide should be taken freely diluted, on an empty stomach, and half an hour before a meal.

Acute interstitial keratitis should be treated by protecting the eyes with a shade or 'goggles,' and by using an ointment containing atropine and cocaine, of each 5 grains to the ounce. Pain may be relieved by hot fomentations. The writer's colleague, Mr. Sydney Stephenson, recom-

mends intramuscular injections of corrosive sublimate, especially where there is irido-cyclitis and consequent danger of a 'closed pupil.' He uses a solution containing 1 grain of the salt to 1 drachm of sterilized water, and of this injects 10 minims deeply into the gluteal muscles once or twice a week, after carefully disinfecting the overlying skin. Twelve such injections constitute a course, and will generally relieve any urgent symptom. Further treatment of the case may be adopted in the usual manner by the mouth. Should diarrhœa or colic supervene, the injection must be suspended. He has never seen suppuration follow the injection, although, however, a hard painful lump may persist for a few days after the small operation. In chronic cases, an ointment of atropine (4 grains) and yellow oxide of mercury (5 grains) may be used to the eyes twice or thrice a day. The atropine may be omitted as soon as the photophobia ceases. In these conditions change of air to the country or seaside are useful adjuvants, and should not be neglected. Should the mother contract syphilis during her pregnancy, she will, of course, require immediate treatment. A case has been reported in which a child became syphilized where the mother contracted the disease as late as near the end of the eighth month of gestation. Mercury should be administered in the form of three grains of gray powder daily, and continued through the pregnancy. Should there be any possibility of a child being syphilitic, treatment should be commenced directly after birth. It is not advisable to wait for symptoms.

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